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Canadian Journal of
PUBLIC HEALTH

VOLUME 49 TORONTO, AUGUST 1958 NUMBER 8

The Hospital Insurance Pattern in Canada[1]

G. D. W. CAMERON,[2] M.D., D.P.H.

THE introduction of a joint federal-provincial program of hospital insurance is a most significant event in the history of health services in Canada. From a national view-point, the development of public hospital insurance plans in each province, designed within the purpose and scope of the federal Act, marks the emergence of an intrinsically new role for the federal government in the field of health care. For the first time the federal government will be providing grants-in-aid to the provinces to assist in the support of provincially administered general hospital care programs. Formerly, the federal role had been restricted to treatment programs for particular classes of persons or persons with special disease conditions and to the general financial support and improvement of health services, facilities and personnel.

The basic objectives of the federal government under the proposed plan are well known to most of you. The reflection of these objectives in the federal Hospital Insurance and Diagnostic Services Act and regulations may have been viewed by some of you at least with the sort of healthy skepticism which we Canadians like to think is a commendably characteristic trait. The opportunity to criticize, probe and examine the nature and provisions of the federal Act, and the mountains of related paper work, which has been afforded the provinces in a series of technical conferences, also reflects the common recognition of the essential provincial primacy in the field of health and the common desire of both levels of government to co-operate fully in the interest of all Canadians.

It is, indeed, a relatively short time since the federal-provincial Conference of Ministers in January 1956, when the federal government formally offered a system of grants-in-aid to meet a proportion of the so-called "shareable cost"

[1]Presented at the forty-sixth annual meeting of the Canadian Public Health Association, Medical Care Section, May 20, 1958, Vancouver, B.C.

[2]Deputy Minister of National Health, Department of National Health and Welfare, Ottawa.

of programs of hospital insurance and diagnostic services to be organized and administered by provincial governments. The passage of federal legislation to give effect to this proposal took place just a year ago, and on July 1 the joint federal-provincial program will be underway in five provinces, and by January 1, 1959 the great majority of Canadians will be covered. While many persons at this meeting have been involved in one way or another with provincial plans for many years, a review of the emerging provincial patterns of organization, administration and financing under the national plan may give a helpful perspective in assessing the adequacy and workability of the proposed program.

The General Pattern of Provincial Hospital Insurance Programs

It is one of the great advantages of a federal state that each province can work out the particular form and type of program that is best suited to its own geography, facilities and population. Indeed, no two provinces have exactly the same pattern and each plan that has been announced to date is significantly different in important features. The new plans coming into existence in Ontario, Manitoba, Nova Scotia and New Brunswick have borrowed from pioneer programs in Saskatchewan, British Columbia, Alberta and Newfoundland, but every province has felt it necessary to make its own modifications.

Two general patterns can be distinguished, based largely on the methods of financing the provincial share of costs. Saskatchewan, Ontario, Manitoba and New Brunswick plan to collect, or are collecting, personal premiums from insured persons and families. The population of Ontario with about 75% currently insured with voluntary plans for some type of hospital benefits, has been accustomed to paying for its hospital care, in large part, through premiums, and this method of financing is apparently generally acceptable to the people of Ontario.

This approach, of course, requires a fairly extensive staff to administer collections through payroll deduction and "direct pay" categories. Billings must be made at regular intervals and a central record of collections kept, or an administrative system devised, in order to know who is insured at any particular time. In addition, separate provision must be made for those unable to pay premiums. The province will pay premiums for so-called "categorical indigents", means-tested groups such as recipients of old age assistance, blindness allowances, persons in receipt of aid to the permanently and totally disabled and recipients of mothers' allowance. A much more difficult group to deal with is that known as "hospital indigents", those who are normally self-supporting but unable to pay hospital bills, or even premiums when family earnings are destroyed by unemployment or illness. For these people, the assistance of municipalities is sought for carrying out necessary tests of family resources, and, when necessary, for payment of premiums so the municipality may avoid responsibility for a share of hospital bills on behalf of this group.

The premium system has worked with conspicuous success in Saskatchewan. The rural nature of its population, the relative scarcity of urban centers, the use of the rural municipality's secretary-treasurer as a collection agent, and

the stability of its population have had much to do with the success of premium collections. A population that shifts employment, that goes on and off payrolls at frequent intervals due to the nature of its industry, as British Columbia found, is a very difficult subject for a premium system.

The second group of plans are those that may be called "sales tax-general revenue" plans. Here there is a nice problem of language. In British Columbia, in 1954, the provincial sales tax was increased to 5% and personal hospital insurance premiums were discontinued, but technically, at least, the province makes its payments for hospital insurance out of general revenues. Therefore B.C.H.I.S. will not be called in this article a "sales tax" plan but the observation is made that British Columbia still has the sales tax. Nova Scotia announced in April that the money for its share of a hospital plan will come from a sales tax. Alberta's plan will be financed from provincial revenues together with a mill tax on property and that province will retain the municipal administrative structure that has been characteristic of its municipal hospital districts for many years. Newfoundland will pay its share of costs from general revenues which have in the past borne well over 50% of the hospital costs of the Cottage Hospital system.

The supporters of this second group of plans argue that administrative costs are lower, that a smaller staff for administration purposes is required, and that the basis of financing is more equitable from a fiscal point of view.

A compulsory personal premium, it is argued, is really a poll tax and very regressive; a selective sales tax, exempting food, clothing and shelter, is claimed by some to be a much fairer form of tax. Sales taxes have seldom been popular and if premiums are more acceptable to the public, this is certainly a point in their favour. Once established, however, sales taxes tend to be accepted as they have been in British Columbia.

From the federal point of view, the decision concerning the method of financing to be employed is entirely a provincial matter. The federal authorities will adapt their approach to that of the provincial plan. For example, as many of you may know, the federal contribution to a province under the Hospital Insurance and Diagnostic Services Act is based on the number of insured persons in that province. If a premium system is employed, it is expected the provinces will be able to build up a count of insured persons from its own records. If, however, a sales tax or general revenue system is employed, it will be necessary to use a census count or official inter-censal estimate of population and exclude from it persons not eligible for coverage, such as members of the armed forces, the R.C.M.P. and inmates of penitentiaries. If a provincial plan meets the basic requirements in terms of range of services provided as specified in the federal Act, is universally available under uniform conditions, and places limits on so-called "coinsurance" or deterrent charges, then the administrative details from the federal point of view can be worked out.

The diversity of provincial approaches to financing their share of costs raises no difficulties in developing the necessary legal agreements with the federal government, since, as mentioned, a province's choice of revenue sources is entirely a provincial matter. Nor, for the most part, have difficulties arisen in defining scope of benefits to be provided under provincial plans. The

range of mandatory in-patient services is outlined in the federal Act, and although there will undoubtedly be some differences among the provincial plans in the exact delineation of certain in-patient benefits, and in the scope of out-patient benefits when the provinces come to introduce such benefits in the future, an essential uniformity will be achieved throughout Canada in the type of service benefits which will be provided under all provincial plans.

Administration

It has been most interesting to see the general administrative systems being developed to operate provincial programs. A formal descriptive document outlining the province's "scheme for Administration" is required as a part of the agreement signed with each participating province. Such documents, following an outline prepared by the Department of National Health and Welfare, have been helpful in developing the administrative features of provincial plans. While not intended in any way to establish or standardize a common administrative system for all participating provinces, the close review of administrative arrangements which has taken place with each province has helped to eliminate certain operational problems that might arise. Certainly, the knowledge gained from those provinces with long experience in this field has helped other provinces immeasurably.

Two features of administration deserve comment. The first relates to the formal organizational structure of the provincial authority designated to administer the provincial plan. Here we see some differences among provinces. One type of arrangement establishes the program within the provincial health department with, of course, close working relationships with other divisions of the department. A second approach is to organize a special commission with a single commissioner or a board of commissioners reporting to the provincial legislature through the minister of health or some other responsible minister. In the commission type of administration, the insurance functions may be located within the commission and jurisdiction over the control and development of hospital services and standards may be focused in the health department but variations of this arrangement are found.

In terms of liaison and administrative relationships between individual hospitals, almost all provincial plans are developing some form of rate board with duties involving the careful review and approval of all hospital budgets and the establishment of all-inclusive rates to be paid for services provided.

Another insurance function on which both federal and provincial levels of government place the highest importance is the constant review and appraisal of the operating experience of each hospital at the year end, not only to assess financial operations as such, but also to relate finances to the facilities and services being provided by the hospital. Here again, the administrative techniques developed or being developed by different provinces are remarkably similar. As a by-product of such arrangements, the federal government will be constantly appraised of provincial problems and their implications for future federal policy.

By and large, and considering the very real problems which have had to be faced, there has been surprisingly little difficulty in working out the

standard agreement to be signed with each province and the necessary reports and records for accounting and statistical purposes. We have had two very informal but most useful conferences on reports and statistics with technical representatives from the provinces, in December and again in April. The federal government, in view of the magnitude of the sums of money involved, will make monthly payments to each participating province as an advance on the money due that province at the end of the year. In order to make these calculations, it will be necessary to have a monthly report of provincial expenditures under the program and of the number of insured persons in each province. The necessary accounting and audit procedures are being worked out by the appropriate technical personnel and I do not anticipate any great difficulty in this area in view of the experience we have had in administering grant-in-aid programs in the past, both in the Health Branch of the Department of National Health and Welfare under the National Health Grants and in the Welfare Branch for income maintenance programs.

As far as statistical reporting is concerned, a good deal of new ground will have to be broken. We must always bear in mind that this is a health program providing health services to the people of Canada. We, therefore, hope to keep fully informed on bed facilities, the movement of patients and days of care rendered, personnel employed in hospitals, staff ratios and training programs for hospital personnel.

You who have worked for many years in the field of public health will know how useful a good program of research and statistics can be in stimulating general public health measures and integrating the public health functions of the department of health with the modern concept of the hospital as a center of health activities for the community. It is hoped that soon each province will have a mechanically punched card for every hospital admission which will show not only the accounting data for that admission, but also diagnostic information, the use made of hospital services, and possibly, some basic social data on the patient. If these data were available on all hospital admissions in the province, over-all questions on specific diseases such as cancer, polio, or any one of a large number of chronic conditions, could be dealt with much more quickly and efficiently than is possible now. Although we do not share in the costs of provincial administration, health grants will be available for specific projects relating to an extension of research and other services which will produce information of much assistance to provincial administrations.

The public health insurance plans that are coming into existence today are building on the experience of the voluntary plans of the past and the pioneering efforts of the public plans in four provinces. Our new network of plans will make it possible to improve our effectiveness in dealing with basic matters of health services and will place financial matters, which have so plagued hospitals in recent years, on a much more stable basis. We may look forward to the day when the annual report of every public hospital plan will tell its readers what services the people of the province are receiving, who is receiving care, and for what illness conditions people are going to hospital.

We are entering an era of new concepts and new possibilities that can lead to a kind and quality of health care for the people of Canada which has

never been fully realizeable in the past. The very considerable difficulties and problems that remain to be solved are as great as any of those which have attended major developments in the field of health. We will all, whether or not we are directly engaged in the planning or administration of hospital and diagnostic services, be affected by the new opportunities for increased service. Let us move forward with pride and humility—and with some humour—for there will be times, as in the past, when we will need it.

GENERAL ASSEMBLY—WORLD HEALTH ORGANIZATION

The Eleventh Session of the General Assembly of the World Health Organization was convened in Minneapolis, Minnesota, May 28 to June 13, 1958 under the presidency of Dr. Leroy E. Burney, Surgeon-General, United States Public Health Service. The Session was preceded by a two-day commemorative session to mark the tenth anniversary of WHO.

Public Health and the Hospital Insurance and Diagnostic Services Program[1]

K. C. CHARRON,[2] M.D.

THE Hospital Insurance and Diagnostic Services program is one of the most significant developments in the health field in Canadian history. It is much more than a fiscal program, as emphasis will be placed on effective utilization of resources, quality of care, and availability of services. The program will have a substantial impact on health arrangements in Canada and presents a major challenge to public health workers. The purpose of this paper is to discuss the relationship between other public health services and the Hospital Insurance and Diagnostic Services program.

Scope of the In-Patient and Out-Patient Services Covered by Federal Proposals

Before attempting to discuss the public health implications of such a program, it is important to have a clear understanding of the scope of the services covered by the federal proposals. In order to participate, a province covenants to make available to residents of the province, upon uniform terms and conditions, the in-patient services set out in the federal Act; a province may elect to extend its provincial program to include one or more out-patient services. The optional feature of out-patient services permits the province to select those services which it is able to provide, consistent with the available facilities in the province. The types of out-patient services for which the Act makes provision are similar to those listed as in-patient services.

The maintenance of high standards of hospital care and of adequate control of hospital utilization, are extremely important and are matters which will receive careful attention. Participating provinces agree to "make such arrangements as are necessary to ensure that adequate standards are maintained in hospitals . . ." The methods by which the provinces will implement this undertaking, may vary somewhat from province to province. Basically, however, it will fall to the medical profession and to the medical staff organizations in participating hospitals, to ensure that high standards are maintained.

Insured services will be provided in a "hospital or other facility", licensed or approved by the province and listed in a schedule to the agreement. It is intended to implement as liberal an interpretation of these sections of the Act as is consistent with a high quality of care. This will allow for relatively simple arrangements in small hospitals, and take into account the requirements of

[1] Presented at the forty-sixth annual meeting, Canadian Public Health Association, Vancouver, B.C., May 19–22, 1958.

[2] Director of Health Services, Department of National Health and Welfare, Ottawa.

special institutions. It will also permit the setting up of certain services on a regional or central basis as long as they are provided in a manner which can be said to be universally available upon uniform terms and conditions.

There are ten categories of in-patient services, listed in the Act. The first six of these should be available in all hospitals in varying degrees, consistent with the role of that hospital in the over-all provincial scheme. The one exception to this statement is that a case room would not be required for certain special hospitals. The acceptance of this principle will help to distinguish between a hospital and a custodial care institution. The following are the listed in-patient services, including an interpretation of the scope of each:

(i) *Accommodation and meals at standard or public ward level*

The hospitals participating in the program will be listed in a schedule to the agreement. It is expected that an adequate proportion of the beds available will be designated as standard ward accommodation and the meals provided will be consistent with present practice which allows for the inclusion of special diets.

(ii) *Necessary nursing service*

It is *not* intended to include as an insured service, private nursing service in the usual sense. However, where additional nursing service is medically necessary, then it would be considered as an insured service. An example of this sort of arrangement is the way hospitals now provide for additional nursing service for seriously ill cases.

(iii) *Laboratory, radiological and other diagnostic procedures, together with the necessary interpretations*

This program would be set up on a province-wide basis, with interpretation being provided when necessary. Allowance is made for flexibility in provincial organization to permit regionalization or centralization of facilities and staff in a manner that best meets the needs of the particular province. The key word in the phrase "together with the necessary interpretation" is "necessary". The attending physician does not require special interpretation for a good many of the diagnostic tests. This is particularly true of the simple arrangements set up in small hospitals where only technician staff is employed. However, if a diagnostic procedure needs interpretation, some arrangement must be provided for adequate interpretation. This requirement was included to ensure a high quality of service.

Standard laboratory and radiological tests will be included as in-patient services in all programs, and a particular province may also select other diagnostic procedures such as electrocardiograms, electroencephalograms, etc. The medical component in the cost of clinical procedures, such as bronchoscopy, gastroscopy, sigmoidoscopy, pneumoencephalography, D. and C., biopsy and eye examinations, will not be included as insured services. However, the hospital facilities required for these procedures, the examination of any specimens obtained by these procedures, and any necessary reports on specimens, will be insured services.

Necessary interpretation of tests will require the setting up of contractual arrangements with qualified physicians such as pathologists and radiologists.

(iv) *Drugs, biologicals and related preparations*

The drugs which a province will provide as part of the insured services will be listed in a schedule to the agreement. These lists are being developed in the provinces by consultation with the medical profession and will reflect sound principles of medical practice.

(v) *Use of operating room, case room, and anaesthetic facilities, including necessary equipment and supplies*

This heading does not require any explanation.

(vi) *Routine surgical supplies*

Surgical dressings and other materials during or following an operation or in other circumstances in the course of hospital care, are included as part of in-patient services. This would not include the provision of prosthetic appliances or other such medical aids on a take-home basis, but it might include the use of such appliances while the individual is a patient in the hospital.

(vii) *Use of radiotherapy facilities where available*

This will include the use of equipment and facilities for superficial and deep X-ray therapy, radium, cobalt bomb and other radioactive materials.

(viii) *Use of physiotherapy facilities where available*

While a considerable number of hospitals will have available a physiotherapy department or facilities, smaller hospitals may not possess them. Where these facilities exist they will be included as part of in-patient services.

(ix) *Services rendered by persons receiving remuneration therefor from the hospital*

This section authorizes certain services to patients in addition to those facilities and services which are specifically authorized by previous sections. It particularly refers to personnel services provided by individuals who have contractual arrangements with the hospitals. It is anticipated that such personnel as physiotherapists, radiotherapy technicians, occupational therapists and medical social workers, would be covered by this section if the provincial program made provision for these services. The employment of interns, residents and physicians engaged in hospital administration or medical direction of programs, as distinct from clinical services provided to individual patients, would also be covered by this section.

(x) *Such other services as are specified in an agreement*

If the province wishes to take advantage of this section, provision is made for such services to be specified in a schedule to the agreement.

Examples of special services which might be considered under this heading are cancer and rehabilitation. If the province develops in selected hospitals,

cancer diagnostic and treatment programs available to all residents of the province on proper referral, and includes in the benefits the services of radiotherapists and supporting technical personnel (but excludes other clinical specialties, i.e., surgery), then the remuneration of such radiotherapists, physicists and so forth would be a shareable item. The same principle would apply to rehabilitation services, with support for medical direction, rehabilitation assessment, physiotherapy and other related procedures ordinarily carried out in a rehabilitation center, but excluding from benefits other clinical treatment services.

Public Health Implications

The need for co-ordination and integration of the hospital insurance and diagnostic services program with other health services at all levels.

As I mentioned earlier, this is more than a fiscal program, it is a health care insurance program. It is not an indemnity type of coverage in which the individual receives a cash reimbursement, but rather it provides for financial and technical advisory assistance for services rendered. Effective utilization and quality of care, together with the availability of resources, are all important factors in the development of such a program.

Hospital insurance and diagnostic services form an important part of the over-all arrangements for health care. They must dove-tail with other health services so that the best possible use will be made of our health resources. The success of this program will depend in no small measure on careful consideration being given to the integration and co-ordination of the insurance program with other health services. The broad responsibility for public health supervision has been placed with departments of public health and they should assume a prominent role in co-ordination and integration for the following reasons: health departments are the agencies to which the public ordinarily turns for health advice; public health departments have an over-all responsibility for health care arrangements; personnel in these departments have established lines of communication with professional and voluntary health agencies. Further, they have legislative authority in the health field under public health and other appropriate Acts; they have a knowledge of health resources and have experience in their effective utilization.

However, it must not be assumed that this opportunity to play a major role will automatically be offered to public health agencies in all circumstances. The programs will be provincially administered and the province may decide to adopt a different type of approach. It will be up to the public health agencies themselves to demonstrate that they have a prominent place in the scheme of things and this cannot be achieved by an attitude of "we will accept the responsibility if it is offered to us". In my opinion, this attitude has plagued public health in the past, and in some instances, opportunities have been lost to be of service to the public.

Federal Administrative Pattern to Encourage Co-ordination

The Minister of National Health and Welfare has been designated as the minister responsible for hospital insurance. Federal arrangements within the

department are designed to encourage a close working relationship between health insurance and other health services (Figure 1). The Health Insurance section, which deals with the hospital insurance and diagnostic services program, is established in the directorate of Health Services. One of the major responsibilities of this directorate is assistance to the provinces on matters relating to health. It is logical, therefore, that health insurance, health grants, and the consulting divisions form part of the Directorate of Health Services. The Research and Statistics Division of the department has an important role, particularly relating to cost estimates, health insurance studies, and program statistics and the Legal Division has provided a most valuable service in the planning and development of legislation and agreements. The Dominion Bureau of Statistics will continue to provide routine hospital statistics and will work closely with the Research and Statistics Division of the Department of National Health and Welfare. The Department of Finance, including the Comptroller of the Treasury, will be actively associated with the program. Similarly, the interests of other federal departments and agencies must be taken into account in its development. The Director of Health Services will be responsible for co-ordination and the health insurance section of that directorate will act as the executive arm in the implementation of the program.

In order to get a clear understanding of departmental relationships, it might be helpful to describe the arrangements under two headings: (a) hospital insurance and diagnostic services and the health grants, and (b) the use of the services provided by consulting divisions.

(a) *Hospital insurance and diagnostic services and the health grants*

At the opening of a federal-provincial technical conference on hospital insurance, held in Ottawa in December 1957, the Minister of National Health and Welfare indicated that national health grants assistance will be discontinued in situations covered by the hospital insurance and diagnostic services proposals. This decision was made to avoid duplication and to establish a clear basic relationship between health grants and health insurance.

In addition, the Minister indicated that health grant funds could be used to help with technical advisory services (standards), research, and training as required for health insurance purposes. He also announced in January of this year that the amount of assistance for hospital construction would be increased and that the terms of the grant would be broadened to include assistance for major renovations and interns' quarters.

Several of the health grants will be affected by these decisions, and this necessitates a close working relationship between the principal medical officer in charge of national health grants and his counterpart in health insurance. In order to establish a sound pattern, a joint administrative section has been set up to serve both health insurance and the health grants. This means that there will be, in future, one file dealing with particular institutions for both health grants and health insurance purposes.

Careful consideration must, of course, be given to the transitional period to ensure that there is no break in the assistance program. In addition, it will be important to take into account the differences between individual provinces

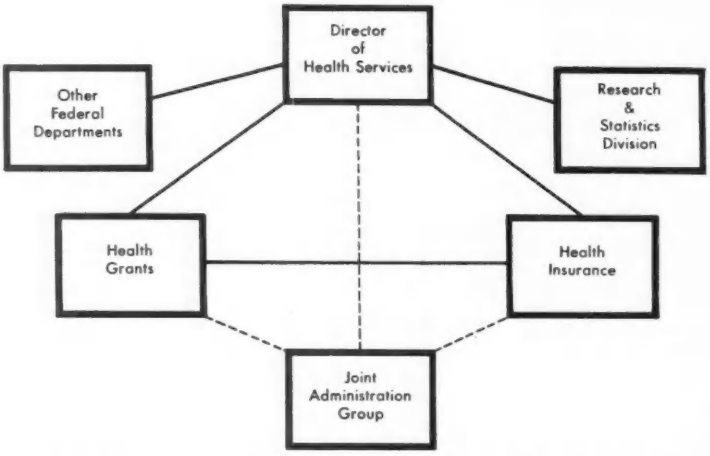

FIGURE 1. Administrative Pattern for Health Insurance and Health Grants in the Department of National Health and Welfare.

FIGURE 2. Directorate of Health Services.

and allow for varying rates of development. All of these points are being very carefully studied and have been reviewed with provincial health departments.

(b) *Use of Consultant Services*

It will be noted, in Figure 2, that there are thirteen consulting divisions listed as Special Health Services. These divisions provide advice in special health fields to other sections of the department including Health Insurance. For example, the Nutrition Division has an over-all responsibility for a nutritional program and has a section dealing with institutions which will provide advice on food and feeding in hospitals. Similarly, the Child and Maternal Health Division will assist with problems in the field of paediatrics and obstetrics. The services of other divisions, such as the Laboratory of Hygiene, Hospital Design, Medical Rehabilitation, Epidemiology, and Public Health Engineering, will all provide a consultant service to Health Insurance. It is hoped by this arrangement to avoid duplication and to ensure close co-operation between the insurance program and these related health fields.

Provincial and local arrangements and their public health implications

The hospital insurance and diagnostic services program will be administered by the individual provinces under the terms of an agreement signed with the federal government. The provinces will designate a provincial authority for administrative purposes and four different types of provincial arrangements appear to be developing. One is to establish the scheme in the health department, with a close working relationship with other sections of that department. A second approach is to set up a commission reporting to the provincial legislature through a responsible minister. In another circumstance, a commissioner has been appointed with deputy minister status and reporting to the minister of health. The fourth arrangement is a modification of the third. A commissioner has been named who will be largely concerned with the insurance aspects and responsible to the minister of health, with the health department having jurisdiction as far as hospital standards are concerned. Regardless of the provincial administrative pattern, a close working relationship should be established between public health services at provincial and local level and the hospital insurance and diagnostic services program. This is essential in order to avoid duplication, gaps or artificial compartments which could affect the continuity and standard of health care. The two fields should provide mutual support, and this might be illustrated by describing some of the common areas of interest. The following will be used as examples of the relationship which should be developed between specific public health activities and the provincial hospital insurance and diagnostic services program: (a) Child and maternal health, (b) Nutrition, (c) Epidemiology, (d) Laboratory services, (e) Medical rehabilitation, (f) Home care, (g) Health units.

(a) *Child and maternal health*

Nowhere are the family implications of total health care more apparent, nor the need for continuity of care more real, than in the care of mothers and children.

In recent years, it has become apparent that the hard core of pregnancy wastage occurs in the perinatal period. This has drawn the attention of both public health workers and clinicians to examine more carefully the facilities and services provided to mothers and newborn during this critical period. Child and maternal health divisions, as well as paediatric and nursing consultants associated with provincial health departments, are sources of information to hospitals regarding recommended standards of maternal and newborn care. They have been instrumental in bringing about many improvements in technical equipment available and in the training of nurses in these areas.

Another area for close hospital-community liaison is in the care of the newborn at home. This is particularly true for babies with special needs such as premature infants or those with congenital abnormalities or other newborn problems. A visit from a public health nurse can be extremely helpful and reassuring, particularly if continuity has been assured by an adequate exchange of information between the treatment services in hospital and the public health arrangements for the community.

The marked increase in organized programs for parent education about pregnancy is familiar to most public health workers. Many hospitals are active in such programs, either through prenatal teaching programs of their own, or by participating in a particular aspect of the teaching being done by the public health agencies. Provincial and local health departments are excellent sources of educational materials and teaching aids for this purpose.

An interesting new development in many parts of Canada is the setting up of poison control centers in hospitals. In a number of communities, an essential part of the investigation and follow-up of a poisoning accident treated in hospital, is a visit to the home by the public health nurse. The obvious purpose of this is to learn more about the circumstances surrounding the poisoning, but the contact can be used, as well, to discuss accident hazards in the home from any cause.

The development of such integrated programs for continuing care of mothers and children requires co-ordinated planning by both public health and hospital workers. A basic requirement is an appreciation in both the preventive and curative branches of health care of the integrity of the family unit, and the interdependence of its members in health or disease.

(b) *Nutrition*

The food service in a hospital involves more than feeding patients at minimum cost. It is also an important factor in recovery. Furthermore, a patient's nutritional state before admission to hospital and during the convalescent period, can have an important bearing on prognosis. The regular health services of a community will be concerned with good nutrition in all circumstances, and nutritionists working with these services can provide valuable advice to hospitals with regard to the feeding of patients.

Provincial divisions of nutrition should be able to provide advisory services to the hospital program, and help with standards of feeding, therapeutic diets, training of personnel, and so forth. In some provinces, the nutrition services employ one or more dietitians to visit small hospitals, while in others these

dietitians are part of hospital administration. In either case, close co-operation is desirable to integrate the efforts of both groups. Where the nutritionist is part of the health team for one or more communities, important contacts will be made not only in the hospital, but also in the community and home. There must be a free flow of information in order to ensure good continuity of health care. This is particularly important in dealing with disease entities such as diabetes, where correct diet is so essential, and also for home care arrangements which need to take into account the hospital-community relationship.

(c) *Epidemiology*

Even though the epidemiologist may traditionally be interested primarily in the preventive aspects of medicine, while hospital services are concerned principally with curative medicine, there are many points where the interests of an epidemiologist and the objectives of a hospital care and diagnostic services program converge.

Diagnosis is basic both to epidemiology and to effective care in hospital, and one of the objectives of the insurance program is to broaden and develop diagnostic services. Improvement in hospital diagnostic facilities will, therefore, be of advantage to the hospital physician and to the epidemiologist.

There are many problems peculiar to the hospital environment with which the epidemiologist, with his study of communicable disease control, may be of assistance. Staphylococcal infections, homologous serum jaundice, and the infectious diarrhoea of the newborn are examples of conditions where an epidemiological approach will be useful in investigation and prevention. Furthermore, with the decline of communicable diseases in the population, isolation hospitals have virtually disappeared, and the communicable diseases are now commonly treated in general hospitals.

The carrying out in hospitals of procedures which are directed towards disease prevention, such as routine chest X-rays and serological tests for syphilis, are other examples where the co-operation of preventive medicine, as represented by the epidemiologist and the practising physician, is to the advantage of each. It is hoped that the development of services under the insurance plan will be of assistance in closing the traditional gap which unfortunately has existed between preventive and therapeutic medicine in the past.

(d) *Laboratory services*

The provision of diagnostic services as part of the hospital insurance and diagnostic services plan will emphasize the need for an expanded public health and hospital laboratory program. Co-ordination of laboratory services at all levels in a province will be extremely important in order to conserve manpower and make the most effective use of available facilities. Each of the ten provinces has a central public health laboratory and, in some cases, many branch laboratories. All of these are accustomed to providing consultant services and this type of support will be particularly significant for small hospitals where it is impractical to retain the services of a clinical pathologist. In addition, some provinces are considering an arrangement whereby pathologists in larger hospitals will visit smaller hospitals in order to provide specialist supervision of laboratory programs. The resources of both public health and large hospital

laboratories are likely to be required to improve standards of laboratory service in small hospitals.

The expansion of diagnostic services must include not only plans for the full utilization of existing personnel of all categories but also a program of training to augment and improve available resources. Financial assistance is available for approved training under the health grants. Personnel in most of our public health laboratories have had experience in setting up training programs and could provide advice in this regard to the provincial authority for hospital insurance. The Laboratory of Hygiene in Ottawa, in co-operation with the Canadian Association of Pathologists, has been giving much attention to the screening of biochemical laboratory procedures and a *Manual of Clinical Chemistry* has been published.

When a province is considering out-patient diagnostic services, these arrangements should be developed after full consultation with workers in the public health and hospital laboratory fields. Consultation during the planning phase will help to avoid duplication, minimize misunderstanding and assist with establishment of high standards. Out-patient diagnostic services should help to reduce the in-patient load, and in addition, improve medical care by making diagnostic services more readily available.

(e) *Medical rehabilitation*

The team concept is stressed in rehabilitation, and public health workers have an opportunity to play a major role as health counsellors in the development and implementation of rehabilitation programs at all levels. Hospital services and facilities form an important part of the medical aspects of rehabilitation and the insurance program will assist substantially in meeting rehabilitation costs. Rehabilitation can also contribute to the more effective utilization of hospital beds so that the two programs provide mutual support.

In dealing with problems of chronic disease and old age, physicians and hospital personnel will turn to well organized health departments for help in solving the many complex medical-social problems which are often associated with these conditions. Public health workers will be called upon with increasing frequency to assist in their solution and to provide leadership for the development of services which will ensure maximum medical, psychosocial, and vocational adjustment.

Every effort will be made to encourage good rehabilitation services in hospitals and these should be part of the over-all provincial rehabilitation plan. Public health officers have an intimate knowledge of community and area health resources, and should be prepared to assist with the orderly development of hospital programs for the rehabilitation of the sick and injured. Health departments, in many cases, have not been prepared to provide an effective rehabilitation advisory service. If this challenge is not accepted, it is inevitable that some other arrangement will be made.

(f) *Home care*

Control of the volume of hospital care is of particular significance in relation to a hospital insurance program. In addition to the controls which are built into a well organized hospital, there is a growing trend toward the establishment of

community programs through which the equivalent of hospital care may be made available in the home. Such programs are directed towards the elimination of the need for hospital admission and arrangements for earlier discharge in suitable cases. The essential ingredient in these programs is the availability of those services which hitherto have not been generally available on an organized basis outside the hospital. These include such services as nursing and physiotherapy under medical direction, and in addition certain welfare services, including social work and home-making.

The methods through which home care programs may be provided vary. They may be based entirely on the hospital itself using hospital personnel; they may be based on the hospital using some hospital personnel but utilizing, through co-ordinated methods voluntary agencies and public health personnel; or home care programs may be organized as an integral part of the public health set-up, using the personnel of municipal or provincial welfare agencies with or without voluntary agency co-operation.

In planning home care programs, the most suitable method to be adopted should be based, in the first instance, on pre-existing services. For example, in communities where visiting nursing services are well organized, it would appear to constitute a waste of valuable personnel to deplete the ranks of hospital nurses for purposes of home visiting. Similarly, many communities are already served by mobile physiotherapy services, and in the welfare field, social workers are employed both by public and private agencies. In the planning of home care programs, these services should be examined to ensure that maximum use is made of those already in existence. If this approach is adopted, it is obvious that full use should be made of public health, hospital, and welfare resources.

(g) *Health units*

Health units can also play an important part in that they might serve as the regional or local representatives for both public health and hospital insurance and diagnostic services interests. This type of arrangement is being actively discussed in one province and is a pattern which, in my opinion, deserves careful consideration.

There is no question that medical officers of health have an intimate knowledge of their own particular regions and in addition to this, they have representatives distributed throughout the region who can carry out assignments. Although the local and regional health units have substantial local independence, their efforts are co-ordinated and supported by resources in provincial departments of health. These resources could be used to advantage by any hospital insurance program. It is interesting to note that in a few cases health units have been established in hospitals in the smaller centers and appear to provide for a close working relationship between the unit and the hospitals. Other members of the staff, in addition to the medical officer of health, can provide a valuable advisory service and have an established status on health matters in the area served.

Programs in the public health field, such as the development of multiphasic diagnostic clinics, would be easier to promote and develop under conditions

where the health unit services are closely tied in with hospital services. One example of a particular aspect of such a program is seen in the case where miniature chest X-rays are taken on all cases admitted to hospital, thus serving as a screening program for certain respiratory and cardiac conditions.

One very important asset which might result from establishing closer relationships between public health units and hospitals would be in the access gained by public health personnel to morbidity statistics available in hospitals. At present, these are not being accumulated in such a way that they could prove of value in assessing the health status of a community. This information could be of considerable value in the planning and development of health care programs.

Summary

The importance of well co-ordinated arrangements between public health and hospital insurance authorities has been outlined. A brief description of the scope of the hospital insurance program has been given, showing the plans for co-ordination within the federal Department of National Health and Welfare. The relationship of the hospital insurance programs, established under the Hospital Insurance and Diagnostic Services Act, and certain public health programs, has been described. Emphasis has been placed on the mutual value of such relationships.

Résumé

L'importance d'arrangements bien coordonnés entre les autorités sanitaires et celles de l'assurance-hospitalisation est mise de l'avant. L'auteur donne une brève description de l'étendue du programme d'hospitalisation, montrant les plans envisagés pour sa coordination dans le cadre du ministère de la Santé nationale et du Bien-être social. Il indique les relations entre les programmes d'assurance-hospitalisation, établis en vertu de la Loi de l'Assurance-hospitalisation et des Services diagnostiques, et certains programmes d'hygiène publique. Il fait ressortir les avantages réciproques de ces relations. (*Traduction: J. Gilbert.*)

The Pathology of Pneumonia in Infancy[1]

C. P. HANDFORTH, B.Sc., M.B., B.S.[2]

DURING the first year of life infectious diseases, particularly those affecting the respiratory system, cause a higher proportion of deaths than at any other age. In infants' lungs the pattern of acute inflammation differs from that in older children and adults. Lobar pneumonia is relatively uncommon in infants whereas bronchopneumonia occurs frequently. Bronchiolitis in infancy sometimes causes asphyxia and apparently trivial respiratory infections may be associated with sudden death. The object of this paper is to describe the pathological changes which are commonly found in infants dying from respiratory infections. Bronchopneumonia, bronchiolitis and sudden death will each be considered separately.

BRONCHOPNEUMONIA. Bronchopneumonia is a bacterial infection which affects numerous lobules in both lungs. It rarely occurs as a primary disease and it nearly always follows some predisposing cause such as a surgical operation, measles or whooping cough. For this reason bronchopneumonia is sporadic rather than epidemic. Bacteria which commonly cause bronchopneumonia are streptococci, staphylococci, pneumococci, *E. coli* and *H. influenzae*. The majority of fatal infections are caused by staphylococci which are resistant to antibiotics.

The onset of bronchopneumonia is usually gradual. The infant's temperature rises, the respirations become rapid and grunting and there is a cough and sometimes cyanosis. Inspiratory and expiratory rhonchi and localized areas of bronchial breathing may be heard, also there may be signs of empyema or pneumothorax. The majority of infants with bronchopneumonia have a leukocytosis, the total white cell count being about 18,000 cells per cu. mm. X-rays of the chest show multiple opacities caused by the localized areas of consolidation. It is not always possible to make a bacteriological diagnosis during life because of the difficulty of obtaining sputum from infants.

The mortality of bronchopneumonia in infancy is about 10% and if death occurs the pathological changes are conspicuous. The lungs are heavier than normal and the affected areas are purple. These areas feel firm and retain their shape instead of collapsing when the thorax is opened. The bronchi contain purulent material and their mucous membranes are congested. When the lungs are cut across beads of pus can be expressed from their surfaces. Microscopically there is an acute inflammatory exudate in the bronchi and in the surrounding alveoli (Fig. 1). In addition, there are areas of collapse and of emphysema. These are caused by complete or partial obstruction of the bronchi. The infecting organism may be cultured from the lung at autopsy.

[1]Presented at the seventh annual meeting of the Atlantic Branch, Canadian Public Health Association, November 6, 1957, Kentville, N.S.

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In summary, bronchopneumonia is a bacterial infection which is usually secondary to some other cause. The onset is not dramatic but takes about twenty-four hours and, if death occurs, the lungs show marked pathological changes.

Bronchiolitis. Bronchiolitis is an acute respiratory disease in which the inflammatory changes affect the bronchi and bronchioles but not the alveoli. Bronchiolitis occurs in epidemics and is thought to be a primary virus infection but the virus responsible has not been identified (1). The clinical and pathological features of bronchiolitis are caused by partial or complete obstruction of small bronchi and bronchioles. Bronchiolitis, like other respiratory infections, may be followed by bronchopneumonia.

The majority of infants with bronchiolitis are less than six months old. At first an affected infant appears to have a mild upper respiratory infection with perhaps some nasal discharge, sneezing and a cough but, at this stage, the illness does not cause any concern. The duration of this period varies from a few days to a week and many infants recover without more serious manifestations. In some, however, there is sudden deterioration within only one or two hours. The infant becomes intensely dyspnoeic and cyanosed and the respiratory rate increases to over 100 per minute. The heart rate also rises and the pulse may be too rapid and weak to be counted accurately. In the most severely affected infants the skin becomes cold, grey and clammy. The chest is held in the expanded position and inspiration is brief and accompanied by indrawing of the lower ribs and intercostal spaces. By comparison expiration is prolonged and there is expiratory stridor. The infant's temperature is not markedly raised, there is no leukocytosis, and X-rays of the chest show only generalized emphysema. At this stage the infant is critically ill and may die of asphyxia but, if recovery occurs, there are usually no sequelae.

At autopsy the lungs are voluminous and may be heavier than normal as a result of terminal congestion. There is no inflammation of the pleura but it may have a mottled appearance caused by underlying areas of emphysema and collapse. When the lungs are cut across and squeezed they may exude bloodstained frothy fluid in which there is a small amount of purulent material.

Microscopically, there are inflammatory changes in the walls of the bronchi and bronchioles but not in the alveoli (Fig. 2). The smaller airways are filled with necrotic debris and polymorphs. In addition to the inflammatory changes there are areas of collapse and of emphysema. Cultures of portions of lung at autopsy do not constantly show pathogenic micro-organisms.

In summary, bronchiolitis is thought to be a primary virus infection. The onset of the terminal stage is sudden and dramatic. If death occurs the lungs show marked pathological changes caused by obstruction of the airways.

Sudden Death in Infants. Sudden unexplained death in infants is not uncommon. The frequency is difficult to assess because death is attributed to a variety of causes, such as pneumonia, septicaemia, inhalation of vomit and accidental suffocation. It has been estimated that every year in the United States several thousand infants in apparent good health die suddenly and unexpectedly (2). In one district of New York, with a population of

Figure 1

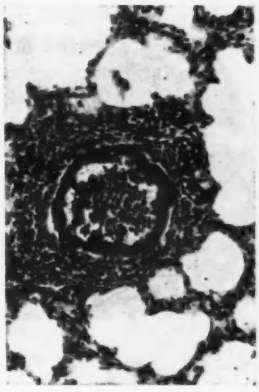

Figure 2

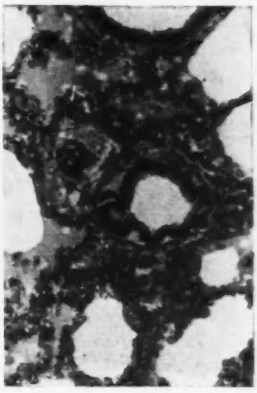

Figure 3

Figure 1. Bronchopneumonia (Haematoxylin and eosin stain) x 150.
Figure 2. Bronchiolitis (Haematoxylin and eosin stain) x 150.
Figure 3. Lung in sudden unexpected death in infancy, (Haematoxylin and eosin stain) x 150.

one and one-half million, over thirty such deaths were observed during one year (3). The majority of the affected infants are under six months old and the most common age is six to eight weeks. Male infants are affected twice as often as females and there is a seasonal variation which roughly parallels that of acute respiratory infections.

The usual history is that the infant is put to bed apparently well and found dead a few hours later. However, it has been shown that information obtained shortly after the infant's death is unreliable. If the parents are interviewed a few days later they usually remember that premonitory symptoms had been present (4). It is possible that general practitioners may see such infants while they are still alive and that some may recover. Clinical descriptions of the physical signs during life would advance our knowledge of the mechanism of sudden death. Observations are needed on the presence or absence of cyanosis and on alterations of the body temperature and the pulse and respiration rate.

At autopsy the principal changes are in the respiratory tract. The lungs are congested and frequently contain small subpleural haemorrhages. Areas of emphysema and collapse may also be present. The bronchial mucous membrances are congested but otherwise normal. When the lungs are cut across bloodstained frothy fluid pours from their cut surfaces. There is sometimes evidence of a mild upper respiratory infection such as laryngitis or early otitis media. The heart is congested and there are frequently petechial haemorrhages in the groove between the auricles and the ventricles. Similar haemorrhages are found in the thymus. The abdominal viscera and the meninges may show vascular congestion.

Microscopically there is pulmonary congestion and oedema with a variable amount of emphysema and collapse. The septa between the air spaces appear thickened but do not contain inflammatory cells (Fig. 3). Cultures of

the lungs at autopsy do not regularly show the presence of pathogenic bacteria or viruses. These pathological changes amount to no more than vascular congestion and oedema and they are insufficient to explain the mechanism of death.

Many attempts have been made to account for the occurrence of sudden death in infancy. Originally it was thought to be due to accidental suffocation and later to a disorder of the thymus, the so-called "status thymicolymphaticus". Both these theories have now been discredited (5). More recently, and with as little positive evidence, the vascular congestion has been attributed to overwhelming pneumonia (3) and (6) and to myocarditis (7).

The pathogenesis of sudden unexpected death in infancy is still uncertain, but it is important to make a definitive diagnosis for registration purposes and to satisfy the parents. If this is not done promptly the parents may be falsely accused of causing the infant's death. The most acceptable diagnosis for registration purposes appears to be overwhelming pneumonia (3). If there is no external evidence of asphyxia, such as a constricting cord around the neck, the parents should be informed that the death is due to natural causes and that they are in no way responsible. Failure to do this may cause life-long bitterness and regret (4).

Summary

A description has been given of the pathological changes commonly found in infants who have died from respiratory infections. The marked changes found in bronchopneumonia, and bronchiolitis are in sharp contrast to the lack of inflammatory changes in infants who have died suddenly and unexpectedly. The changes in these infants are those of pulmonary venous congestion and oedema, the pathogenesis of which is uncertain. The parents of these infants should be assured that death is due to natural causes and not negligence.

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Value of Preliminary Incubation in Bacteriological Milk Tests[1]

C. K. JOHNS, Ph.D.

IN North America, great stress has been laid upon prompt and adequate cooling of milk for pasteurization. With attention largely concentrated on obtaining low bacterial counts, the tendency has been to forget that efficient cooling may mask faulty production practices. With the rapidly spreading use of farm bulk cooling tanks, this aspect demands attention. Bulk tanks are often sold to the farmer as the cure for all his bacterial troubles; since growth of all but psychrophilic bacteria is virtually eliminated, producers have found they can relax sanitary precautions and still meet current bacteriological standards with ease. This is particularly true where dye reduction (resazurin, methylene blue) tests (1) are employed. When the bacteria are in a dormant state following refrigeration, reduction may be unduly delayed. This has lead to the suggestion that the resazurin test be replaced by the plate count method (33). In some areas (7, 8) lower plate count limits have been established for bulk tank milk, resulting in two different standards for the same grade of milk.

With bacterial growth inhibited by efficient cooling, there is increasing need for a means whereby milk produced under poor sanitary conditions may be detected. While a much more intensive program of farm inspection would help, cost would rule it out in most areas. There remains the possibility of modifying existing testing procedures. One such modification appears promising and is the subject of this paper.

In aseptically-drawn milk, the flora grow best at body temperature and poorly at temperatures approaching 10° C. (50° F.) (10). In contrast, contaminants from soil, water, etc., many of them psychrophiles, grow well at lower temperatures (10). Therefore, if subjected to a preliminary incubation or "aging" period before the usual test is applied, milks carelessly produced should show much greater bacterial growth than those more carefully produced. In Britain this principle is recognized. Wilson *et al.* (34) recommended holding samples at atmospheric shade temperature for 12–18 hours before testing; this recommendation was incorporated into the regulations when the modified methylene blue test replaced the plate count for examining raw milks (19). Powell *et al.* (25) recommended holding samples at 50°–55° F. until the following day before testing. Skar (27, 28) also recommended an aging period or preliminary incubation to enhance the usefulness of the methylene blue test. Johns (12, 13) found 12.8° C. (55° F.) for 18 hours to be most satisfactory in magnifying the differences between cleanly produced

[1]Contribution no. 457 from the Bacteriology Division, Science Service, Canada Department of Agriculture, Ottawa.

milks and those of more mediocre quality. Subsequent studies have confirmed the suitability of this combination of temperature and time for this purpose.

Studies with Commercially Produced Raw Milks for Pasteurization

Sources, Types and Handling of Samples

Through the co-operation of local milk plants, 9 batches of 20–22 samples of incoming raw milks were obtained between July and November, 1957. These purposely comprised a large proportion of samples from sub-standard shippers. Samples were held in ice water until they arrived at the laboratory around 10.00 a.m., where with one exception, the tests were commenced at once. While they were being plated for standard plate count (1) at 32° C., a resazurin triple reading test (1) was started, while a further 10 ml portion was laboratory-pasteurized at 62.8° C. for 30 minutes, cooled promptly and plated out. On two occasions, samples (10 and 14 respectively), each representing two milkings, were obtained directly from farm bulk tanks. When fresh, these samples were plated out for psychrophiles (1), and the second set also for coliforms on desoxycholate agar (1). Smears for direct microscopic clump count and leucocyte count were stained by the acid-water-free stain (1). A second tube for the resazurin test was refrigerated until *ca* 3.00 p.m., when it was tempered to 12.8° C. and incubated at that temperature for 18 hours. It was then plated out (standard plate count) and the resazurin test was conducted at 35° C. Resazurin test readings were terminated after 4 hours.

Results and Discussion

Since the voluminous data from the various tests are to be published in bulletin form, only the over-all picture will be presented here. The effect of preliminary incubation (P.I.) on grading by both resazurin and plate count tests is shown in Table I. The resazurin test graded more severely than the plate count on fresh samples, probably because of the numerous samples with high leucocyte counts (11, 14). Following P.I., however, with leucocyte activity diminished (20), there is much closer agreement between the two tests at both count levels. This suggests that after P.I., milk supplies could be graded as effectively by the resazurin test as by the more complex and expensive standard plate count method (9). Furthermore, since P.I. would involve

TABLE I—Grading of Milk Samples[1] Before and After Preliminary Incubation

Grade Standard	Number and Percentage of Samples			
	Fresh		P.I.	
	No.	%	No.	%
Plate count >200,000/ml.	50	27.5	113	66.8
Plate count >1,000,000/ml.	7	3.8	82	48.5
Resazurin reduction <3 hrs.	72[2]	39.6	117[4]	64.0
Resazurin reduction <2 hrs.	33[3]	18.1	79[5]	43.5

[1]Of 182 samples, plate counts after P.I. were only obtained in 169 cases.
[2]Of these, 63 had leucocyte counts over 500,000/ml.
[3]Of these, 30 had leucocyte counts over 500,000/ml.
[4]Of these, 87 had leucocyte counts over 500,000/ml.
[5]Of these, 61 had leucocyte counts over 500,000/ml.

a delay of a day in getting results, the fact that resazurin test results could be available at noon the day following sampling, almost 2 days earlier than results of the standard plate count, is a strong point in its favour.

With both the standard plate counts and reduction times, some samples showed little or no change following P.I., others showed a sharp deterioration in quality, while many were intermediate. These variations no doubt reflect differences in types of bacteria contaminating the milk, and in their ability to grow at 12.8° C., as well as different degrees of inhibitory action exhibited by the milks themselves. To give a better idea of the two extremes, Table II was

TABLE II—RESULTS OF VARIOUS TESTS ON SELECTED RAW MILK SAMPLES, JULY-NOVEMBER, 1957

	Sample No.	Standard Plate Count A[1]	Standard Plate Count B[2]	Standard Plate Count B/A Ratio	Resazurin R.T. (hrs.) A[1]	Resazurin R.T. (hrs.) B[2]	Direct Microscopic Count Bacterial Clumps	Direct Microscopic Count Leucocytes	Lab. Pasteurized Count/ml	Coliforms /ml
I	D 12	19,000	2,400,000	126.3	4	1½	30,000	540,000	5,000	
	D 8	30,000	1,500,000	50.0	3½	2½	70,000	430,000	4,300	
	H 17	30,000	2,200,000	78.5	>4	2½	30,000	330,000	2,500	
	C 7	40,000	11,000,000	275.0	>4	1½	80,000	670,000	2,000	
	L 20	49,000	1,000,000	20.4	3½	1½	80,000	600,000	2,500	
	E 11	51,000	2,200,000	43	3½	1½	30,000	320,000	3,800	
	H 14	54,000	1,300,000	24.1	2½	1½	30,000	620,000	3,000	
	C 1	57,000	1,700,000	29.8	3½	1½	190,000	440,000	6,700	
	C 6	60,000	900,000	16.0	3½	1½	80,000	650,000	900	
	C 11	76,000	6,800,000	89.5	>4	1½	80,000	650,000	2,500	
	D 18	77,000	4,900,000	63.6	4	1½	110,000	600,000	3,200	
	E 12	110,000	13,000,000	118	3	¾	40,000	1,200,000	13,000	
II	G 9	5,000	7,000	1.4	>4	>4	5,000	110,000	600	
	G 13	9,000	24,000	2.7	4	4	5,000	1,000,000	2,000	
	G 2	11,000	28,000	2.5	>4	3½	30,000	600,000	1,100	
	L 18	11,000	31,000	2.8	>4	>4	30,000	290,000	800	
	H 19	12,000	30,000	2.5	4	3½	30,000	300,000	1,700	
	E 8	13,000	11,000	0.8	3	4	60,000	730,000	1,100	
	G 16	15,000	18,000	1.2	>4	>4	5,000	700,000	500	
	L 16	15,000	17,000	1.1	>4	>4	30,000	240,000	200	
	G 8	18,000	24,000	1.3	>4	>4	15,000	950,000	7,200	
	K 13	18,000	37,000	2.1	>4	>4	30,000	190,000	3,400	370
	K 19	20,000	36,000	1.8	3	4	30,000	600,000	2,100	80
	G 11	29,000	32,000	1.1	>4	4	10,000	540,000	5,700	

A[1] = No preliminary incubation.
B[2] = Preliminary incubation at 12.8° C. for 18 hours.

prepared; 12 samples of "can" milk were selected which showed marked deterioration (Section I), while another 12 were chosen which showed little change (Section II). By the tests on the fresh samples, all in Section I would have been considered "acceptable"* by the standard plate and direct microscopic counts and all but one (H 14) by the resazurin test. By the tests after P.I. they would all have been considered definitely unacceptable. In contrast, all those in Section II would have been considered acceptable, both fresh and after P.I.

The results obtained with farm bulk tank milks are shown in Table III. Here again, certain samples (e.g. E 21, L 4, L 12), showed low counts when tested fresh, but deteriorated appreciably following P.I. Others (e.g. E 17, E 18, E 19, E 22) showed little or no deterioration following P.I. The high psychrophile counts on many samples strongly suggest that the sanitary care of bulk tanks is frequently neglected. Excessive numbers of thermoduric bacteria in milk generally indicate neglected milking equipment. Since these organisms grow on surfaces and not in milk (6, 15), they would not multiply

*The standards for "acceptable" milk are those most widely used in North America (32).

TABLE III—Results of Various Tests on Farm Bulk Tank Samples, July and November, 1957

No.	Standard Plate Count A[1]	Standard Plate Count B[2]	Standard Plate Count B/A Ratio	Resazurin R.T.(hrs.) A[1]	Resazurin R.T.(hrs.) B[2]	Direct Microscopic Count Bacterial Clumps	Direct Microscopic Count Leucocytes	Lab. Pasteurized count /ml.	Coliforms /ml	Psychrophiles /ml
E 13	55,000	59,000	1.1	1½	1	10,000	2,600,000	27,000		230
14	460,000	5,700,000	12.4	2½	1	270,000	1,000,000	77,000		820
15	69,000	3,700,000	53.6	4	1¾	140,000	1,200,000	200		1,000
16	26,000	93,000	3.6	>4	>4	70,000	750,000	200		1,000
17	12,000	15,000	1.3	>4	>4	40,000	760,000	300		50
18	14,000	47,000	3.4	3	>4	60,000	1,400,000	500		860
19	12,000	22,000	1.8	3	>4	80,000	1,400,000	3,700		70
20	670,000	19,000,000	28.4	1¾	¾	380,000	2,200,000	78,000		200,000
21	27,000	1,500,000	55.5	>4	3	30,000	970,000	1,200		44,000
22	18,000	22,000	1.2	>4	>4	30,000	570,000	<100		50
L-1	91,000	2,600,000	28.5	>4	3½	220,000	760,000	200	10	490
2	330,000	21,000,000	63.5	>4	<½	1,100,000	140,000	1,600	780	220,000
3	1,400,000	50,000,000	35.6	>4	¾	3,400,000	270,000	4,100	130	880,000
4	31,000	4,100,000	132.1	>4	3	80,000	780,000	400	<10	5,100
5	610,000	2,400,000	3.9	2½	1	650,000	600,000	100,000	<10	1,200
6	180,000	18,000,000	100.0	2½	<½	200,000	480,000	500	<10	16,000
7	420,000	16,000,000	38.1	3½	<½	780,000	240,000	55,000	<10	170,000
8	210,000	970,000	4.6	>4	2¼	170,000	570,000	10,000	<10	410
9	87,000	2,500,000	28.7	>4	3¼	60,000	970,000	1,100	20	830
10	74,000	4,700,000	63.5	>4	¼	290,000	350,000	900	10	84,000
11	130,000	4,100,000	31.5	>4	1¼	70,000	300,000	94,000	1,500	1,700
12	16,000	750,000	46.9	>4	>4	70,000	190,000	100	70	430
13	67,000	1,400,000	20.8	>4	2¼	30,000	430,000	1,600	<10	1,500
14	140,000	7,000,000	50	>4	2½	30,000	330,000	300	<10	2,200

A[1] = No preliminary incubation.
B[2] = Preliminary incubation at 12.8° C. for 18 hours.

during P.I., and this procedure would not help in detecting them. There does not appear to be a close correlation between thermoduric bacteria and the mesophilic and psychrophilic contaminants which do multiply during P.I. In Table II there is little difference in the levels of thermoduric counts between the "acceptable" and the "not acceptable" groups of samples. Similarly, there is little correlation among the bulk tank samples in Table III. These findings support the contention of Wilson *et al.* (34) that the laboratory pasteurization test is not "suitable as a general test for the cleanliness of milk supplies". It is, however, the only test currently available for detecting this type of contamination from neglected milking equipment.

Despite the expectation that they might reflect careless production conditions, coliform counts were not closely correlated with plate counts or reduction times, either before or following P.I.

Studies on Milk Produced under Controlled Conditions

The results examined thus far have shown that milks with comparable bacterial content when fresh may show marked differences following P.I. While the author's observations, as well as those of sanitarians and fieldmen, strongly support the contention that poor sanitary conditions or practices were associated with the deterioration observed with many samples following P.I., it was deemed desirable to seek more definite evidence. To this end, a controlled experiment was carried out for 8 days at the Central Experimental Farm wherein the following conditions were compared:—

1. Neglected cows, neglected milking machines
2. Neglected cows, clean milking machines
3. Clean cows, neglected milking machines
4. Clean cows, clean milking machines.

The neglected cows were not brushed during the test period, nor were the udders washed before milking. The neglected milking machines were fitted with old liners, and the teat-cup assemblies initially contaminated with high-count milk; the teat-cup assemblies were filled with 0.13 per cent lye solution between milkings; the pails and pailheads were merely rinsed in cold water, and for part of the experiment the pails remained covered between milkings to encourage bacterial growth.

Samples were taken directly from each milker bucket, brought to the laboratory and placed in ice water in a refrigerator at 4° C. At around 9.30 a.m., nights' and mornings' samples from each treatment were composited, and the analyses commenced.

Results and Discussion

From the data presented in Table IV, several conclusions may be drawn; first, that milk drawn from clean cows by clean milking machines shows no

TABLE IV—RESULTS OF VARIOUS TESTS ON SAMPLES OBTAINED UNDER CONTROLLED CONDITIONS

Date Analyzed	Standard Plate Count A[1]	Standard Plate Count B[2]	Ratio B/A	Resazurin R.T. (hrs.) A[1]	Resazurin R.T. (hrs.) B[2]	Direct Microscopic Count Bacterial Clumps	Direct Microscopic Count Leucocytes	Lab. Pasteurized count/ml.	Coliforms /ml.
1. Neglected Cows, Neglected Milking Machines									
Jan. 6	2,500,000	24,000,000	9.6	2¼	¼	1,600,000	200,000	1,400	3,000
7	800,000	11,000,000	13.8	4	1¾	330,000	200,000	790	500
8	160,000	900,000	5.6	4	2½	60,000	350,000	90	20
9	250,000	600,000	2.4	>4	4	400,000	180,000	25	25
10	230,000	650,000	2.8	4	2¼	100,000	<14,000	40	16
11	910,000	1,500,000	1.7	3½	2	430,000	14,000	390	25
12	440,000	1,800,000	4.1	4	2	300,000	95,000	55	4
13	230,000	1,500,000	6.5	>4	2¼	180,000	48,000	35	4
2. Neglected Cows, Clean Milking Machines									
Jan. 6	4,300	8,600	2.0	>4	>4	30,000	130,000	10	1
7	800	700	0.9	>4	>4	15,000	81,000	20	<1
8	4,600	3,200	0.7	>4	>4	30,000	130,000	90	<1
9	2,700	L.A.		>4	>4	10,000,000	190,000	<10	<1
10	3,000	2,000	0.7	>4	>4	30,000	81,000	15	<1
11	8,200	6,600	0.8	>4	>4	30,000	14,000	15	2
12	1,900	15,000	7.9	>4	>4	330,000	14,000	<10	1
13	5,900	22,000	3.7	>4	>4	40,000	81,000	10	2
3. Clean Cows, Neglected Milking Machines									
Jan. 6	2,000,000	24,000,000	12.0	2½	¼	1,200,000	33,000	1,100	9,000
7	1,500,000	16,000,000	10.6	3	¾	1,800,000	130,000	600	500
8	110,000	470,000	4.3	>4	3¼	110,000	48,000	130	10
9	240,000	540,000	2.3	>4	2¾	330,000	81,000	45	4
10	360,000	970,000	2.7	4	2¼	300,000	250,000	130	9
11	1,500,000	3,500,000	2.3	3½	2	1,200,000	140,000	1,900	33
12	1,100,000	4,900,000	4.5	3	1¼	1,900,000	160,000	190	3
13	240,000	950,000	4.0	>4	3½	300,000	180,000	330	8
4. Clean Cows, Clean Milking Machines									
Jan. 6	1,700	1,700	1.0	>4	>4	40,000	62,000	30	<1
7	2,000	1,500	0.8	>4	>4	40,000	81,000	10	<1
8	3,000	2,700	0.9	>4	>4	30,000	14,000	10	<1
9	4,000	2,800	0.7	>4	>4	110,000	62,000	15	<1
10	5,200	4,500	0.7	>4	>4	10,000	130,000	35	2
11	2,800	2,200	0.8	>4	>4	10,000	180,000	5	4
12	690	690	1.0	>4	>4	280,000	180,000	<1	<1
13	5,000	8,500	1.7	>4	>4	40,000	190,000	15	<1

A[1] = Fresh.
B[2] = Following preliminary incubation.

deterioration following P.I., and second, that under the conditions existing during the experiment, failure to brush the cows and to wash their udders had little influence upon the bacteriological quality of most samples. On the other hand, the role of the neglected milking machine in contributing bacterial contamination is strikingly emphasized. Not only were the initial counts from the neglected machines roughly a hundred times as great, but also appreciable further quality deterioration resulted from P.I.

The distribution of the ratios of plate counts before and after P.I. is shown in Table V, where the ratios are grouped according to the conditions of the milking machines. The Chi-square analysis indicates a very significant relation-

TABLE V—Distribution of Plate Count Ratios

	Condition of Milking Machine		
Ratio B/A[1]	Clean	Neglected	Total
<1	9	0	9
1—4	5	7	12
>4	1	9	10
Total	15	16	31

Chi-square analysis
$X^2 = 15.72$; df = 2; p = 0.001
A^1 = Standard plate count, fresh.
B = Standard plate count, after P.I.

ship between utensil sanitation and growth during preliminary incubation. Resazurin reduction tests were not run beyond 4 hours; up to this point there was no evidence of deterioration following P.I. in any sample drawn with clean milking machines, but all those drawn with neglected milking machines showed some deterioration.

Although plate count increases for samples drawn by neglected milking machines were more modest than those shown earlier, they were still usually appreciable, indicating that saprophytic contaminants from the milking machine were able to multiply at 12.8° C. (Similar conclusions may be drawn from the classical studies of Ayers, Cook and Clemmer (2), under hand-milking conditions). As might be expected, this growth was reflected even more in resazurin reduction times than in plate counts. Consequently, with well-cooled milks the results of the resazurin reduction test following preliminary incubation are a much more reliable indication of bacteriological quality than those obtained without preliminary incubation. This was also quite evident in Tables II and III.

In some areas the coliform count is regarded as the most reliable index of clean milk production. While high coliform counts were obtained on four samples from neglected milking machines, the general levels were surprisingly low, even when both cows and machines were neglected. Thermoduric counts from the neglected milking machines were also much lower than anticipated. Incidentally, despite the very weak (0.13%) lye solution used for wet storage

of these units, surprisingly few bacteria were picked up from the teat-cup assembly; at the close of the experiment a milk sample drawn with a neglected assembly using a sterilized pail and pail-head, gave a standard plate count of only 6,800 per ml. It would appear, therefore, that the pails and pail-heads, rather than the rubber parts, were responsible for a high percentage of the contaminants coming from the neglected milkers. This point may deserve more attention than it has received in the past.

In Table IV there are three instances where the direct microscopic count was very high in comparison with the standard plate count. These high counts were confirmed by two observers. Apparently they represent bacterial species unable to form countable colonies under the prescribed conditions of incubation.

General Observations

The relationship between the care taken in the production and handling of milk and the bacterial content has been recognized for over half a century. High counts are more commonly the result of growth rather than of heavy contamination (2), and this has generally been borne in mind in setting bacteriological standards. With growth practically eliminated by very efficient cooling, control officials are faced with the problem of detecting faulty production practices which may be masked by such cooling. Although it is generally agreed that a carefully produced milk which has not been well-cooled is more desirable than one carelessly produced but well-cooled, there has been little emphasis on this point in North America, where attention has been concentrated more on low counts as indices of milk quality.

That the results of bacteriological tests applied to a fresh sample of well-cooled milk may be misleading has been recognized by various investigators, particularly in Britain. It has also been recognized there that in carefully produced milk the count did not increase in 20–24 hours if the temperature did not rise above about 60° F. (3, 18). Consequently, in the Clean Milk Competitions instituted in England and Wales in 1920, samples were held at atmospheric temperature for about 24 hours before testing. This practice was then carried over into official sanitary control. In the early days much of the milk supply was furnished by producer-retailers and samples were taken at the farm. Ice being scarce and costly, all samples were subjected to ambient air temperature until tested the following day.

When the methylene blue reduction test replaced the plate count for official control in England and Wales (19), it soon became evident that it often failed to detect high-count milks held at winter atmospheric temperatures for 12–18 hours before testing (17, 31). To overcome this shortcoming, Thomas and his co-workers (25, 29) recommended holding samples overnight at 10°–12.8° C. (50°–55° F.), before testing. Thomas *et al.* (30) subsequently suggested pre-incubation at 16° C. (60.8° F.) for 24 hours to detect unhygienic milk production by the short resazurin test. Nichols and Jackson (21) also compared the plate count and methylene blue reduction test as means of assessing production methods. They found relatively severe overnight storage

conditions (22° C., 72° F.) showed the greatest differences, with the methylene blue test considerably more sensitive to increasingly dirty conditions than was the plate count.

The value of preliminary incubation as an aid in the detection of post-pasteurization contaminants in milk has also been stressed by Provan and Rowlands (26); to increase the sensitivity of the tests, Scandinavian workers (4, 5, 23) have also found it desirable to store processed samples at 17° C. (62.6° F.) for 24 hours before testing by methylene blue, coliform or plate count methods.

From the foregoing it is evident that in Britain, where facilities for cooling milk are generally less adequate than in North America, the principle of pre-incubation before testing has been generally accepted and incorporated into their regulations. In North America, where efficient cooling may more readily mask faulty production practices, the need for acceptance of this principle is correspondingly greater. This is not to argue that cooling should be neglected, but rather that *major emphasis should be placed upon clean conditions and practices if truly high-quality milk is sought.* That such milk may consistently be produced *without* mechanical refrigeration is attested by the Copenhagen milk supply; yearly average plate counts of well below 10,000 per ml are not uncommon (24). Such milks can only be produced where scrupulous cleanliness is observed; they are a tribute to the informed care exercised by Danish dairy farmers.

Criticism has been voiced from time to time because milks with fairly low bacterial counts sometimes fail the resazurin test. Where this happens, we have almost invariably found a high leucocyte count (c.f. Table II, H 14, E 8). Since a leucocyte count of 1,000,000 per ml is considered to represent mastitis infection in at least 40 per cent of the herd (16) it seems highly desirable that milk with a high leucocyte count should not be accepted as a high grade product, even though the plate count may be very low. Rather than being regarded as a shortcoming, this ability of the resazurin test to reflect the presence of abnormal milk should be considered an advantage not possessed by either the plate count or the methylene blue reduction test. Unfortunately, this advantage is largely lost following P.I. It would be necessary to run an extra test on the fresh sample, preferably adding toluol to inhibit bacterial growth (22), in order to detect such abnormal milk.

The objection may be raised that the adoption of P.I. would necessitate revising present bacteriological standards for acceptable milk. As the data in Table I show, much larger percentages of samples would fail to meet present standards if subjected to P.I. This does not necessarily prove that standards must be relaxed; it more probably indicates that too many samples classed as "acceptable" when tested fresh are really milks of mediocre quality. Carefully produced milks show little or no change following P.I. (Tables IV and V). This modification therefore offers an opportunity to place the emphasis where it rightly belongs—not on highly efficient cooling, but on *clean* production practices. A low plate count or long reduction time on a fresh sample cannot guarantee the desired degree of sanitation in milk production; after P.I. there is a much greater degree of such assurance.

Summary and Conclusions

Efficient cooling can mask careless practices in milk production. Especially when farm bulk tanks are used, present bacteriological standards appear much too lenient. None of the tests currently used in routine control can be relied upon to distinguish between carefully-produced milk and that produced under less satisfactory conditions. If, however, samples are pre-incubated at 12.8° C. for 18 hours before being tested, many show a marked deterioration in bacteriological quality, while others show little or no change. The latter are considered to represent more satisfactory sanitary conditions of production than are the former, and the adoption of preliminary incubation as an aid to quality control is strongly recommended.

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A Pilot Project for Evaluation of Schools of Nursing

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FOR several years the Canadian Nurses' Association has considered the feasibility of initiating an accreditation program for schools of nursing in Canada. Basic to the discussion of such a program was the belief that if the quality of nursing service rendered by the profession is to be improved, then the preparation for that service must be improved. Motivated by this belief the Association, at its general meeting in 1956, approved the initiation of a pilot project to study all aspects of an accreditation program.

Following this general meeting in 1956, a special committee was appointed to initiate a pilot project for the evaluation of schools of nursing in Canada. This committee outlined a plan of action for the project, the objectives of which are: to determine whether Canadian schools of nursing are ready for a program of accreditation, if it is feasible at this time to initiate a program of accreditation and to determine the basis on which schools of nursing in Canada can be accredited; to explore procedures in carrying out an accreditation program; to determine the personnel and other resources needed to carry out a national program and to estimate the cost of a national program of accreditation.

It was decided that the pilot project should involve a study of hospital schools of nursing in as many regions of Canada as possible. Accordingly, the one hundred and seventy-four diploma schools were asked to indicate their willingness to participate. Ninety-six schools volunteered, and subsequently twenty-five schools were selected on the basis of geographical location, size, control and type of program. At least one school in each province was chosen. A director for the study was appointed in September 1957.

Prior to establishing a plan of action for the pilot project, members of the Canadian Nurses' Association discussed the possible methods of approach with the National League for Nursing, which has had many years of experience in accrediting schools of nursing. This organization and the American Nurses' Association are the two professional nursing associations in the United States of America. The National League for Nursing has as one of its major objectives the improvement of nursing education to provide better nursing service. It has accepted accreditation as one means of improving educational programs in nursing. The National League for Nursing offered assistance in training personnel for this project. Subsequently, the director worked with the NLN Accrediting Service studying the theory and procedure of their program with a view to adapting their methods to the survey of selected schools of nursing in Canada.

A major part of the project will be a comprehensive one week survey of each of the twenty-five schools. The survey team will consist of the director

and a regional visitor who is a nurse educator from an adjacent province. In surveying the five French language schools a senior bilingual visitor will participate.

Prior to the survey, each school selected will be required to complete a detailed preliminary information schedule, answering questions on all aspects of the educational program, as well as submitting supplementary current material. When the survey is scheduled the visitors will spend one week at the school. The visit will provide an opportunity to verify, document and clarify the information submitted in the written materials. Every effort will be made to help the faculty see the relationship of this visit to the total project, as well as a process through which it can develop skills in evaluating its own program, in identifying its problems, and in seeking solutions for these problems. The first day of the survey will be spent reviewing all the written material, the second, third and fourth days visiting in the school, and two days writing the report, which will be read to the faculty before the visitors leave. The visit in the school includes conferences with the chief administrative officers of the educational unit and the institution controlling it, the director of nursing service, faculty members, librarian, student counselors, social director, director of the health program, student representatives of each class, and student organization. Tours will be made through the hospital, students' residence, health offices and library. Visits are to be made to one of the co-operating teaching agencies, such as the psychiatric hospital, public health agency or the children's hospital. Ward classes will be visited and an examination made of student records, minutes of committee meetings, etc.

From the visit and the written material the visitors will write a report which will describe all the major areas of an educational program, i.e., organization and administration, instruction personnel, student personnel services, curriculum, evaluation, library, setting for the educational program, and records, reports and announcements. This report should clearly interpret the program.

The written survey reports will be studied by a board of review. This board will consist of nurses who are actively engaged in nursing education, public health, and provincial nursing school visiting. Also invited to the meeting of the board will be a representative of the Canadian Medical Association and the Canadian Hospital Association. Each school participating in the project will receive from the board, a list of major strengths in its program, as well as the areas requiring continued study and improvement. There will be no published grading of schools at this time, but the status of the school will be determined and recommendations made as to desirable goals.

The Canadian Nurses' Association realizes that this project cannot be successful without the co-operation of other professional groups. To assist in interpretation of the project to these groups, the Canadian Nurses' Association is setting up a liaison committee which will include representatives from the Canadian Medical Association, the Canadian Public Health Association, the Canadian Hospital Association, and the Canadian Association for Adult Education.

At present, schools of nursing are approved by the provincial registered nurses' association or a similarly recognized body. This approval is compulsory and is based on minimum standards which depend upon provincial legislation. It indicates that a school of nursing has met minimum standards set by the province to ensure that its graduates will be safe to practise nursing. A program of accreditation which is now being studied would be voluntary and national in scope. Accreditation would be a "seal of approval" awarded to a school by the national organization after survey and evaluation of the program. It would indicate that its program had met the criteria and was worthy of public recognition.

The criteria for evaluation would be formulated by the profession, and based on sound principles of education and nursing care. These criteria would be constantly subject to change as the nursing profession changes under the

impact of new developments in medical and social science. If the program of accreditation is to be a dynamic one, a school would be evaluated not only on the basis of these established criteria, but would also be reviewed within the framework of its own stated purposes and functions, and every effort made to determine the effectiveness with which the curriculum had been planned to fulfill them. Although the purposes and functions must be in harmony with those accepted by the profession, this permits a broad range within which the school may initiate new ideas to the limits of its faculty's vision. The accreditation process is envisaged as an educational venture in which the educational unit plays a very important role in its self-improvement and self-evaluation.

This pilot project, sponsored by the nurses of Canada, which involves a study of all facets of accreditation is scheduled for completion by mid-summer 1959. As a result of this study the nursing profession will be faced with the task of deciding if an accreditation program for schools of nursing in Canada is feasible and desirable.

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LEMUEL SHATTUCK—AMERICA'S GREAT PUBLIC HEALTH PIONEER

"We believe that the conditions of perfect health, either public or personal, are seldom or never attained, though attainable;—that the average length of human life may be very much extended, and its physical power greatly augmented; that in every year, within this Commonwealth, thousands of lives are lost which might have been saved; that tens of thousands of cases of sickness occur, which might have been prevented;—that a vast amount of unnecessarily impaired health, and physical debility exists among those not actually confined by sickness;—that these preventable evils require an enormous expenditure and loss of money, and impose upon the people unnumbered and immeasurable calamities pecuniary, social, physical, mental, and moral, which might be avoided;—that means exist, within reach for their mitigation or removal;—and that measures for prevention will effect infinitely more than remedies for the cure of disease."

From the Report of the Sanitary Commission of Massachusetts, published in 1850, Lemuel Shattuck, Chairman.

C.-E. A. Winslow,
Am. J. Pub. Health, Vol. 39, No. 2.

Food Plant Inspection[1]

ANDREW HOLLETT,[2] B.Sc., M.Sc.

PRIOR to July 1, 1954, the Food and Drug Directorate of the Department of National Health and Welfare had no direct control over sanitary conditions relating to foods and drugs. On that date the new Food and Drugs Act became effective. Under the old Act, food was deemed to be adulterated if it consisted in whole or in part of filthy, putrid, disgusting, rotten, decomposed or diseased animal or vegetable substance, or if it was otherwise unfit for food. Evidence had to be demonstrated in the food itself. Obviously, food could be produced or stored in grossly unsanitary conditions, and yet a sample taken from it might fail to establish evidence of filth and thus fail to prove the food to be adulterated. Under our present Act it is an offence to manufacture, prepare, preserve, package or store for sale any food, drug or cosmetic under unsanitary conditions. This, together with the authority granted an inspector under Section 21 of the Food and Drugs Act enables this Directorate to check conditions under which food is manufactured, prepared, packaged, preserved or stored for sale. Emphasis is therefore placed today on control at the manufacturing level rather than by the less effective method of control at the retail level.

In the inauguration of the plant inspection program, the Directorate did not wish to duplicate the work conducted by other sanitarians but it was their desire to co-operate with local and other authorities. Inspection of food plants is but one of the duties for which a Food and Drug Inspector has responsibility. Further, the number of inspectors is very limited; at present, nine serve the four Atlantic provinces. It was necessary, therefore, to establish priorities in inspection, giving first place to those in which the hazards to health resulting from insanitation are most important. Cheese factories, abattoirs, poultry canning and eviscerating plants, bakeries, and meat and meat products establishments have been given priority. The order of priority is subject to change, as circumstances may require that a soft-drink or other plant receive attention because of evidence of unsanitary conditions. In different inspectoral districts, the control exercised over food factories by provincial and municipal health officers may permit more attention being given to other plants. In the Eastern Region, which consists of five districts—Saint John, N.B., Charlottetown, P.E.I., Halifax and Sydney, N.S. and St. John's, Newfoundland—there are 10 cheese factories, 366 abattoirs, 161 bakeries, 104 poultry plants and 101 meat and meat by-products plants.

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[1]Summary of paper presented at the seventh annual meeting, Atlantic Branch, Canadian Public Health Association, Kentville, N.S., November 6-8, 1957.

[2]Regional Director, Eastern Region, Food and Drug Directorate, Department of National Health and Welfare, Halifax, N.S.

Food establishments are rated on the basis of the findings arranged in 18 groups, each group having two or more sub-factors. Groups are judged as satisfactory, fair or unsatisfactory, depending on the findings regarding sub-factors, of which there may be a total of 89. Of primary importance are the groups bearing the title "processing room", "factory infestation" and "personnel hygiene". If two or more of these major groups are found unsatisfactory, the whole plant is rated as unsatisfactory. The plants are rated from 1 to 9, with the lower numerical ratings assigned to the better plants. Uniformity of rating has been attained through the use of detailed instructions and by training in which joint co-operative inspections are employed. By this method, a trainee inspects plants in company with other inspectors and with training officers from another region.

Report of the inspection

At the conclusion of the inspection a report is completed presenting the findings and comments of the inspector. The same report form is used for all food plants and constitutes a detailed record of conditions observed at the time of inspection. It is intended solely for the use of the Directorate and copies are not made available to other agencies. By reference to these reports changes in sanitary conditions at a factory can be observed.

Before leaving a plant the inspector discusses his findings with the owner or manager and tries to obtain his co-operation. He leaves a brief report on which are outlined any unsanitary conditions which need correction. Health officers and sanitary inspectors are familiar with these reports since copies are sent to the deputy minister of health of the province or directly to the local public health authority depending upon the procedure followed in the province. Frequently, the local sanitary inspector accompanies the Food and Drug inspector and thus has first-hand knowledge of the conditions outlined in the report. In such a joint visit, both inspectors can press for a correction of the undesirable conditions, and this co-operation is most helpful.

It is recognized that in making an inspection an inspector must keep in mind the type of operation carried out in an establishment. He will not expect the same degree of cleanliness at a slaughter-house as at a bakery, to mention two extremes. After operations are completed, however, the clean-up should be effective in slaughter-houses, poultry plants and similar establishments.

In making the inspection of any plant, an inspector will look for evidence of unsanitary conditions or practices that are common to all types of establishments. These include: rodent excrement and other signs of the presence of rats and mice, presence or evidence of insects, dirty equipment and utensils, unsatisfactory toilet facilities, and work habits that can result in contamination of the food being produced or handled as well as carelessness, dirty clothing, etc. The inspector will note if the building is in such condition as to result in the contamination of the product or has dirty walls, or broken or unsatisfactory floors. He will give attention to the proper and frequent disposal of wastes or other materials which might attract flies and rodents. Photographs taken by the inspector may be very helpful in effecting improvement. In some plants bacterial swabs may be taken from possible sources of con-

tamination. The most frequent and serious criticism relates not to the buildings but to unsanitary conditions which can be corrected at little cost.

With food factory inspections there must be an educational program. Ignorance and apathy must be overcome, and the concept dispelled that correction of unsanitary conditions need not be made if all the produce can be readily sold.

The greatest hazards to health lie in those products that may be produced under unsanitary conditions and consumed without being heated or processed. Of these, cheese and prepared meats are the most important. It may be argued that there is little need that animals be slaughtered and meat dressed under sanitary conditions since subsequent preparation and cooking of the meat preparatory to eating will destroy pathogenic organisms. This attitude is untenable. Filth, from whatever source, is abhorrent to the consumer even though it may have been rendered harmless by heat treatment. Moreover, there is no assurance that cooking is always adequate to destroy pathogenic organisms.

This year, the successful prosecution by our Directorate of two establishments for manufacturing food under unsanitary conditions has demonstrated that where an educational policy is unsuccessful and unsanitary conditions persist, punitive measures will be taken. Happily, the results to date indicate that the majority of food factory owners and operators co-operate to correct unsanitary conditions.

WHAT IS EDUCATION?

The aim of an educational institution is to give students a living fund of knowledge from which they may generate ideas. When you can bring relevant background to bear on a problem, assemble pertinent data, grasp relationships, appraise the values involved, and make a judgment: when you can do that you are an educated person.

Then you need not fear becoming bewildered by change or thrown into a panic by misfortune, because you will be able to determine three vital things: where you are, where you are headed, and what you had better do under these circumstances.

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Canadian Journal of Public Health

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INCREASING OUR SUPPORT OF OUR ASSOCIATION

THE annual meeting of the Association, held in Vancouver last May, gave careful consideration to the findings of the committee appointed under the chairmanship of Dr. K. C. Charron to study its needs. The study was most timely as the Association has made important progress during the past five years. Of very great significance has been the organization of provincial branches and and the relating of existing health associations to the national Association. Public health workers in all but one province now have annual meetings of their provincial public health organizations and the provincial associations are represented at the annual meeting of the national Association. The meeting of the General Council in Vancouver therefore provided an opportunity for presentation of the views of all the provincial associations.

The membership of the national Association has been increased from approximately 1,000 to nearly 1,700 during the past five years. Interest in the Association is reflected in the size of its membership. The Association has always enjoyed the support of medical officers of health and other physicians engaged in health work. It has included the leaders in public health nursing, sanitation and other health fields but it is only during the past three years that they have joined the Association in large numbers. This larger participation in the national Association reflects the organization and successful functioning of the provincial associations. Today, the national Association is in a strong position and can speak authoritatively. The Journal of the Association has achieved its largest circulation in a half-century of publication. Its prestige as a scientific journal in preventive medicine and public health has been enhanced and the Journal has a worldwide reputation.

Dr. Charron's committee was faced with the problem of the urgent needs of the Association growing out of these developments and the new responsibilities which the Association must assume if it is to serve effectively as the national public health association of Canada. The committee's recommendations dealt with the future of the Association. The plans outlined to meet the needs of the coming years call for a budget twice that of the present. Obviously, the implementing of part or all of the plans is dependent upon the provision of the necessary funds. To operate the Association today, without salaried

executive officers, with the minimum of office expenditures and with every economy in the publication of the Journal, requires approximately $600 a week. These expenditures are steadily increasing due largely to the increased costs of printing. The committee was faced with the first deficit in the past four years in the operations of the Association. The Executive Council reviewed the situation and, knowing that further deficits would be incurred, recommended to the annual meeting that the financial needs of the Association be brought to the attention of the members and that the membership fee in the national Association be increased to $5.00 annually. It was felt that the Association had delayed too long in placing this problem before the members and in asking each member to play a larger part in helping the Association.

During the past three years the Association has laid the foundations for a major advance. It is the function of the Association to speak for the public health workers of Canada, making known the vital contribution which public health is making to the welfare of every citizen in Canada. It is confidently expected that the provincial associations will support this effort and that there will be increased membership and financial support. In this way, the members can express their approval of this forward movement of the Association.

NATIONAL HOSPITAL INSURANCE COMMENCES IN CANADA

NATIONAL Hospital Insurance in which the government of Canada and the provincial governments participate was inaugurated on July 1 in British Columbia, Alberta, Saskatchewan, Manitoba and Newfoundland. Nine of the ten provinces have expressed their desire to participate in the plan. In Ontario, the plan becomes effective on January 1, and it is expected that by July 1 of next year all of the nine provinces will have the plan in operation.

In Saskatchewan and British Columbia, province-wide hospital plans had been functioning for some years. Alberta, too, had a provincial-municipal hospital plan which started in 1950. Therefore, when the enabling legislation was passed by Parliament at Ottawa these provinces were ready. Newfoundland, with its cottage hospital and medical services, and Manitoba, with its hospital services closely linked with the provincial health program, were also able to implement the agreement and commence the plan.

Appropriately, in this issue, two important contributions to this subject are presented. One is by Dr. G. D. W. Cameron, Deputy Minister of National Health, the other by Dr. K. C. Charron, Principal Medical Officer, Department of National Health and Welfare. These papers present the different methods of approach and planning adopted by the various provinces and, as well, an insight into the complexity of the problem.

National hospital insurance in Canada is now a reality. Much remains to be done before all the citizens in every province receive its benefits. There will be many problems but the spirit of co-operation and the understanding among the medical profession, the hospital and public health authorities and the provincial and federal governments, that has characterized its planning, will make possible their solution.

ASSOCIATION NEWS

Canadian Public Health Association—Membership Fee

The annual meeting of the Association, held in Vancouver from May 19 to 22, unanimously approved of increasing the national portion of the membership fee from $2.00 to $5.00. This action was taken on the recommendation of the Executive Council following the report of Dr. K. C. Charron, Chairman of the Committee on the Needs of the Association, which studied the Association's program, its future work and budget. The increase reflects the urgent need of the Association for greater financial support in order to maintain its present work.

Representatives of various provincial associations and members from all parts of Canada expressed their approval of this action. The provincial branches and associations will, in turn, give consideration to implementing this measure. At the same time, the provincial associations will give consideration to the program and will seek ways and means of strengthening the Association financially so that during the coming years the recommendations of Dr. Charron's committee may be gradually implemented. These include the appointment of a full-time executive director, increased support of the provincial associations and enlargement of the Journal.

British Columbia Branch

At the annual meeting of the B.C. Branch, Canadian Public Health Association held on May 20, the key speaker was Dr. Hugh Paul, Honorary Consultant in Epidemiology, Birmingham Regional Hospital, England. He drew a large and appreciative audience from members of the Canadian and American Public Health Associations and the Health Division of the Community Chest and Council, as well as the B.C. Branch.

New executive officers for the B.C. Branch elected at that meeting are: President, Dr. A. A. Larsen; 1st Vice-President, Mrs. D. E. Slaughter; 2nd Vice-President, Mr. Wm. Wookey; Secretary, Miss C. Perkins; Treasurer, Miss M. Upshall; Executive Members, Miss N. Woods, Dr. M. Maclean, Mr. A. Dobson, Miss G. Harris, Mr. M. Ewan, Miss C. Charter, Past President, Dr. S. McMaster.

Alberta Division

Regional meetings were held in Edmonton and Calgary recently in honour of the visit of Dr. Hugh Paul, Professor of Public Health at the University of Birmingham, England.

NEWS NOTES

National

The Canadian Tuberculosis Association has a new member on its staff, Dr. C. W. L. Jeanes, who has been appointed assistant to Dr. G. J. Wherrett, executive secretary.

Dr. Jeanes, who came to Canada from London, England, where he was in charge of Greenwich Chest Clinic, is already well known to Canadian tuberculosis workers, having spent some months visiting clinics and sanatoria across this country when he was NAPT exchange scholar in 1956.

Dr. Paul David of Montreal has been elected president of the Canadian Heart Association. A member of the Institute of Cardiology in Montreal, he succeeds Dr. F. A. L. Mathewson of Winnipeg. Dr. W. Ford Connell, of Kingston, was named vice-president and Dr. Robert Fraser of Edmonton, secretary-treasurer.

At the 23rd annual convention of the Canadian Dietetic Association, the following officers were elected: President, Diane Raymond, Montreal; President-Elect, Florence Silverlock, Toronto; Vice-president, Dr. Rachel Beaudoin, Montreal; Secretary, Kathleen Gillespie, Montreal; Treasurer, Isabel Lockerbie, Toronto.

The following candidates were recently granted the Certificate in Sanitary Inspection (Canada): R. H. Béland, Sudbury, Ont.; G. L. Bellefeuille, Three Rivers, Que.; T. Billson, Sarnia, Ont.; W. Blazewicz, Hamilton, Ont.; D. P. J. Cordwell, Cornwall, Ont.; D. M. Decaire, Hamilton, Ont.; J. M. Dionne, D.M.V., Montmagny, Que.; N. Dumais, D.M.V., Rivière-du-Loup, Que.; H. T. Ford, Toronto, Ont.; Y. A. Hubert, St. Hyacinthe, Que.; D. C. Jones, Milton, Ont.; A. Majeau, Montreal, Que.; A. D. McConnell, Guelph, Ont.; R. B. McCulloch, Fort William, Ont.; J. B. Michaud, Sudbury, Ont.; R. R. Moir, Newmarket, Ont.; C. Mongeau, Magog, Que.; J. W. Ormerod, St. Catharines, Ont.; G. M. Plouffe, Ottawa, Ont.; R. G. Quance, Simcoe, Ont.; H. R. Robinson, Oshawa, Ont.; G. I. N. Shirton, Hamilton, Ont.; B. E. Swanlund, Milton, Ont.; W. G. Vance, Pickering, Ont.

Federal

A bill amending the Hospital Insurance and Diagnostic Services Act to authorize federal contributions being made as of July 1, 1958 to a participating province which has a plan in operation and to make certain changes in the administration of the Act was passed by Parliament late in June.

In his budget address Hon. Donald M. Fleming, federal minister of Finance, announced that, effective June 18, costs of drugs purchased under prescription, eyeglasses, ambulance charges, and laboratory and diagnostic charges may be included in the items allowed in the deduction for medical expenses for income tax purposes.

A parliamentary return tabled in the House of Commons recently states that, according to the estimates of the Department of National Health and Welfare, some 5,200,000 persons up to 40 years of age had received one or more doses of anti-poliomyelitis vaccine by March 31, 1958. The total cost, shared equally by the Dominion government and the provinces, was $1,117,104 in the 1957–58 fiscal year. Of the supplies used in Canada 87.8% came from the Connaught Medical Research Laboratories, Toronto, 8.5% from the Institute of Microbiology and Hygiene, Montreal, and 3.7% was imported from the United States. The Department of Trade and Commerce reports that Salk vaccine produced in Canada has been exported to some 40 countries.

The subcommittee on statistics of the advisory committee on mental health met in Ottawa late in April to consider possible changes in the card reporting system and to review the type of statistics being gathered nationally in regard to mental health.

The Canadian Council on Nutrition met in Ottawa early in June and adopted resolutions related to the need for more nutrition education, the problem of misinformation about foods, the desirability of national and regional nutrition conferences, the progress on a revised dietary standard for Canada, vitaminized apple juice, vitamin D overdosage in infants, the danger of adding vitamin C to milk and the activities of federal and provincial nutritionists.

Hon. J. Waldo Monteith, minister of National Health and Welfare, gave an address on the hospital insurance program at the recent annual meeting of the Cana-

dian Medical Association in Halifax. He was accompanied by the deputy minister of national health, Dr. G. D. W. Cameron.

Gordon H. Josie, Sc.D., research officer (biostatistics), research division, has been invited to serve as a member of the WHO expert advisory panel on health statistics.

E. F. Sheffield, Ed.D., director of the education division of the Dominion Bureau of Statistics, resigned at the end of May to become research officer for the National Conference of Canadian Universities, Ottawa.

Dr. E. H. Lossing, M.P.H., formerly chief of the epidemiology division, has been appointed a principal medical officer in charge of health insurance studies succeeding Dr. C. A. Roberts who resigned late in 1957.

George Goos and Guy Boucher, both 1958 graduates in civil engineering, have joined the Regina and Montreal staffs respectively of the public health engineering division. The former attended the University of Saskatchewan and the latter the University of Montreal.

Dr. L. B. Pett, chief, nutrition division, was elected to the governing body of the Nutrition Society of Canada at its second annual meeting in Kingston, Ont., early in June.

School of Hygiene, University of Toronto

A "Breakfast Meeting" of the School Alumni Association with the President, J. H. Baillie, in the Chair was held in the Hotel Vancouver, May 22 during the Canadian Public Health Association meeting. The Director of the School reported on the general progress of the School and of the new course leading to the Diploma in Bacteriology. The meeting decided that in addition to the annual award of the Donald T. Fraser Medal a lecturer would be chosen, probably every third year. Thirty-two members were present including the following: G. F. Amyot; J. H. Baillie; D. M. Black; A. N. Beattie; M. R. Bow; R. Bowering; R. F. Brown; U. P. Byrne, A. E. Chegwin; M. Dantow; M. R. Elliott; J. Gilbert; M. E. Jarrett; G. R. Jones; H. J. Lambert; J. M. Mather; V. L. Matthews; M. G. McCallum; A. L. McKay; C. I. G. Mackenzie; Susan McMaster; S. S. Murray; G. W. O. Moss; Agnes O'Neil; D. S. Puffer; A. J. Rhodes; A. Somerville; D. Stewart; R. G. Struthers; G. Walton; Reba E. Willits; E. J. Young.

The following staff changes in the School of Hygiene have been announced: *New appointments*: Mr. R. E. Builder, assistant professor in hospital administration; Mr. K. S. McLaren, assistant professor in hospital administration; Dr. D. M. McLean, assistant professor (part-time) in microbiology (virology). *Promotions*: Dr. J. G. Cunningham, professor (part-time) and head of the department of Physiological Hygiene; Dr. William Mosley, professor of public health; Dr. J. E. Goodwin, associate professor of physiological hygiene; Dr. R. B. Sutherland, assistant professor (part-time) physiological hygiene.

Dr. Kenneth I. G. Benson of Nelson, B.C., was awarded the Donald T. Fraser Memorial Medal as the most outstanding student attending the School of Hygiene in session 1957–58.

Newfoundland

Premier Smallwood turned the first sod of the provincial government building in St. John's. It will be known as Confederation Building, to mark the province's union with Canada ten years ago. The structure will cost $8,000,000 and will bring together all provincial government offices and about 2,000 civil servants now scattered in 14 separate buildings.

Prince Edward Island

The Executive Committee of the Canadian Medical Association held a luncheon at the Charlottetown Hotel in honour of Dr. Roderick James McDonald of St. Peter's Bay who celebrated his 100th birthday on May 16. Dr. McDonald is the oldest physician in Canada.

Dr. John Craig of Glasgow, Scotland, has assumed his appointment as Director of the Division of Laboratories and Provincial Pathologist, a position held by the late Dr. J. H. Shaw. Dr. Craig is a graduate in pathology from Glasgow University.

Dr. G. Harvey Agnew has been conducting a survey to determine the adequacy of hospital beds in the province for present needs and upon the introduction of hospital insurance.

New Brunswick

Substantial progress has been made in Gloucester County in the pasteurization of milk supplies. Dr. Vincent Gendron, D.P.H., district medical health officer, reported that there are now seven pasteurization plants in the county supplying almost every section. Dr. Gendron urges that compulsory pasteurization be enforced in areas where pasteurized milk is available.

Two graduate civil engineers from the University of New Brunswick have been

appointed to the Sanitary Engineering Division of the New Brunswick Health Department. They are Patrick Blanchard of Paquetville and Gilbert Delong of Fredericton. Mr. Blanchard will undertake a year's study in sanitary and public health engineering at the University of Michigan and Mr. Delong will take a similar course at the University of Toronto.

The Hospital Care Insurance Act and the Public Hospital Act were passed by the 1958 session of the New Brunswick Legislature. These Acts prepare the way for the New Brunswick Hospital Insurance Plan to be inaugurated in 1959, according to a government announcement.

Quebec

Dr. Leon Gerin-Lajoie was nominated president of the World Medical Association for 1959–60 at the Canadian Medical Association meeting in Halifax. The Association had the honour of naming the president for the coming year as the Association will he host to the next annual meeting which will be held in Montreal September 6–12, 1959.

Dr. Donald C. Bews, medical director of the Bell Telephone Company, was elected a director of the Industrial Medical Association at its forty-third annual meeting in Atlantic City, N.J.

Ontario

Mr. Kenneth L. Hawkins, Director of Public Health Information, Ontario Department of Health, addressed the Canadian Tuberculosis Association meeting in Quebec City on "Public Relations in Rehabilitation".

Dr. Bruce H. Hopkins, Director of the Ongwanada Sanatorium, which serves the east-central counties, was presented with a plaque marking his 40 years of service in the fight against tuberculosis. The presentation was made during the annual meeting of the East-Central Counties Tuberculosis Association at Kingston by Dr. Harold Ettinger, Dean of Medicine at Queen's University.

Dr. L. A. Pequegnat, retired medical officer of health for the city of Toronto, is organizing a pilot home care service in one of the city's eight public health divisions that offers a representative population. Other cities have pioneered home care treatment but the Toronto system is unique in that it is based on the family doctor. He will decide whether his patient can be treated as well at home as in hospital and will request what he thinks necessary in equipment or services. The purpose of the plan is to shorten some patients' hospital stay, to get others out of hospital sooner and to keep some people out of hospital entirely. It is not a substitute for hospital attention but a method of equipping homes so that patients, including the chronically ill, can have continuous care and maximum rehabilitation in familiar surroundings. By providing home facilities, the home care service hopes both to free more hospital beds and to provide better care for patients.

Dr. Pequegnat will co-ordinate the services of nurses, homemakers, physio- and occupational therapists, the Red Cross and other agencies and payment will be arranged directly between the patient and the agencies.

Dr. Charles H. Harris, for 23 years medical officer of health of London, Ontario, has retired. He was recently honoured at a civic dinner.

A railway car converted into a chest X-ray clinic by the Ontario Department of Health was sent through Northern Ontario to make a mass X-ray survey. The car, supplied by the Ontario Northland Railway, travelled from the eastern section of the vast northern area to the Lakehead and back on the lines of the Canadian Pacific, Canadian National and Algoma Central as well as the Ontario Northland. During its extended tour this railway car covered about 3,500 miles. It was expected that close to 15,000 people would have their chests X-rayed during the trip.

Manitoba

Under the Rheumatic Fever Prevention Program, which commenced operation in Manitoba November 1, 1957, there are now 363 persons receiving free prophylactic penicillin tablets. In order to qualify for receipt of this drug, a private physician makes application on behalf of his patient to the Bureau of Preventive Medical Services, Manitoba Department of Health. This application, along with a clinical summary, is studied by a committee of paediatricians and cardiologists, who categorize and authorize the distribution of these tablets. Fifty per cent of the cost is paid by the provincial government, with the municipality of legal residence paying the balance.

A. G. McLeod, Director of Food Control, attended the first annual convention of the Canadian Institute of Food Technology, in Montreal, June 11–13.

Sponsored by the Bureau of Maternal and Child Hygiene, an institute on prenatal education for nurses was conducted at the Uni-

versity of Manitoba, June 16 to 26. The institute was under the direction of Miss Aileen Hogan, R.N., M.A., C.N.M., Consultant in Maternity Nursing, Maternity Center Association, New York, and was financed by a federal grant.

The Manitoba hospital insurance plan became effective on July 1. The plan will cost $27,000,000 a year. The Federal government will pay 46%, or about $12,500,000. Premiums of $2.05 for single persons and $4.10 for families will produce $11,500,000, or 43%, and 10% or $3,000,000 will come from the provincial treasury.

Saskatchewan

Dr. G. D. McKerracher, head of the Department of Psychiatry, University of Saskatchewan, Saskatoon, has accepted an invitation to serve on the Expert Advisory Committee on Mental Health, WHO. This is an honorary appointment for 5 years.

Mr. P. J. Swallow, senior sanitary officer, Rosetown-Kindersley-Biggar Health Region Number 7, has resigned on transfer to another branch of the government.

Dr. A. G. Lowden was awarded the Diploma in Public Health, School of Hygiene, University of Toronto. He will serve temporarily with Dr. P. T. Prestage in Yorkton-Melville, Health Region Number 10.

Saskatchewan's fifth annual Farm Safety Week was held from July 20 to 26.

Dr. Dirk A. van Binnendyk from South Africa has been appointed director of the Division of Hospital Administration and Standards in the Saskatchewan Department of Public Health.

Dr. van Binnendyk graduated from the University of Witwatersrand, Johannesburg in 1929 and was a psychiatrist in the union government service for eight years. He served as superintendent of a general hospital for five years and subsequently was first inspector and then director of hospital services for Cape Province.

A two-week training course for health educators who have recently joined the Division of Health Education was held June 16 to June 27. Those attending were Mr. Joseph Sowinski and Mr. Peter Fahlman of headquarters staff, Mr. Edward Labach of the North Battleford Health Region and Mr. Philip Kotyk of the Yorkton Health Region.

Miss Mary Edwards, Director of Public Health Nursing, has announced the following changes in staff: *New appointments*—Miss E. Chlopan, B.Sc., to Yorkton; Miss D. Duck, B.Sc., to Prince Albert; Mrs. N. MacDonald, B.Sc. to Saskatoon; Mrs. L. Carscadden to Yorkton; Mrs. G. Samuels to Prince Albert; Mrs. B. Crozier to Weyburn, Mrs. G. Askew to Moose Jaw, Miss L. Howat to Prince Albert. *Returned from University*—Miss G. Nepper to Assiniboia; Miss E. Slee to Swift Current; Miss L. Dyck to Swift Current; Miss O. Bieber to Weyburn; Miss I. LaRoque to Rosetown; Miss B. McInnes to Regina. *Transfers*—Miss B. Ryhorski from Assiniboia to Yorkton; Miss S. Capusten from Prince Albert to Yorkton, Miss O. Yonge from Prince Albert to Swift Current.

Alberta

A new health unit has been established in the City of Lethbridge. Dr. H. M. Brown of the Athabasca Health Unit has been appointed medical officer of health, and Mrs. Gwen Law of the Medicine Hat Health Unit has been appointed senior nurse. Other appointments include Miss Agnes Short, Mrs. Hilda Furlong, Mrs. Dorothy Gooder and Mrs. Dorothy Wold as staff nurses, and Mr. M. L. Friend as sanitary inspector.

Mrs. Janet Bailey has been appointed assistant to the director of public health nursing in the Provincial Department of Public Health. Mrs. Bailey was formerly nursing supervisor of the South Okanagan Health Unit in Kelowna, B.C.

Miss Esther Robertson, Nursing Consultant in the Division of Child and Maternal Health, visiting from Ottawa, was among the speakers at a conference of municipal nurses and senior nurses of health units held in the Provincial Department of Public Health from 26 to 28 May.

British Columbia

Dr. Kenneth I. G. Benson has been appointed director of the Cariboo Health Unit in Prince George. He recently completed postgraduate training at the University of Toronto, where he was awarded the Fraser Memorial Medal.

Dr. J. H. Smith, has been appointed Director of the North Fraser Health Unit in Mission.

The Netchako Valley Health Centre was opened in Vanderhoof on June 14. Dr. Charles E. McDonnell, who has been keenly interested in the establishment of the Centre, made a special trip to Vanderhoof to attend the formal opening.

Dr. E. C. McCoy of Vancouver was elected chairman of the College of General Practice of Canada at the Winnipeg convention of the College.

Books and Reports

CLINICAL AND IMMUNOLOGIC ASPECTS OF FUNGOUS DISEASES. *J. Walter Wilson, M.D., Published by Charles C. Thomas. Published simultaneously in Canada by the Ryerson Press, Toronto. 1957, 280 pp., $7.50.*

Dr. J. Walter Wilson is a specialist in dermatology. In addition to a wide clinical experience, he has been a student of coccidioidomycosis for many years and has taken a keen interest in the laboratory aspects of mycology. He has also been a teacher of medical mycology. In the introduction, he states that the present volume is not intended to compete with the several excellent textbooks in this field, but to supplement them somewhat by presenting the clinical and immunologic aspects of fungous diseases in more detail. While it is intended primarily for clinicians, it should appeal also to all who are interested in medical mycology and the study of infectious diseases in general, beyond the level of pure laboratory technology. The author believes that coccidioidomycosis can be an especially valuable guide in the study of infectious diseases, exhibiting a unique series of well-defined phenomena in the realms of epidemiology, pathology, allergy and immunology. For this reason, he has devoted the first seven chapters to a discussion of this disease. Other chapters present sporotrichosis, blastomycosis, histoplasmosis, actinomycosis and other fungous diseases emphasizing the clinical and immunologic aspects. A carefully selected bibliography occupies 25 pages. Physicians will find this text a most useful reference to fungous diseases of man. This monograph is one of a series in the Bannerstone Division of American Lectures in Dermatology edited by Arthur C. Curtis, M.D., University of Michigan Medical School, Ann Arbor.

ORTHOPSYCHIATRY AND THE SCHOOL. *Morris Krugman, Ph.D. Published by the American Orthopsychiatric Association, Inc., 1790 Broadway, New York 19. 1958. 265 pp., $4.00 (30¢ additional for postage and handling).*

In the introduction the author states that the traditional "team" in orthopsychiatry consists of psychiatrist, psychologists, and psychiatric social workers. "Although definitely not limited to service to children, orthopsychiatry has, historically, been much more active with children than with adults. . . . It has been overwhelmingly involved in clinics, hospitals, treatment centers and social agencies and only obliquely concerned with schools. . . . In recent years many programs have been developed, experiments conducted, projects administered, to 'bridge the gap' between orthopsychiatry and the schools." In considering ways of accomplishing this, the Board of Directors of the American Orthopsychiatric Association recommended the publication of a volume such as this, consisting mainly of papers read and symposia held at annual meetings. The volume contains abstracts of twenty-six articles showing the relationship of orthopsychiatry to schools and to education. The editor has been most successful in presenting various views by teachers, physicians, psychiatrists and psychologists so that the reader obtains a well-rounded view of the subject, presented concisely.

CHILDREN UNDER FIVE. *J. W. B. Douglas and J. M. Blomfield. Published by George Allen and Unwin Ltd., 40 Museum Street, London, W.C.1, 1958. 177 pp., 21s.*

This is a unique study of the first five years of life of more than 5,000 children from all parts of Great Britain and from all social classes. The children were born during the first week of March of 1946 and have been investigated periodically, but only the first five years are described here. The program was sponsored by the Institute of Child Health (University of London), the Society of Medical Officers of Health, and the Population Investigation Committee. It is one of the Studies in Society edited by Ruth and David Glass. Grants were made in the early years by several national agencies. The first section of the book describes the home background of these children and their changing circumstances during the survey years. Social class differences, both in growth and health, form the subject of the second and third sections which also include special studies of accidents and of children admitted to hospitals. The final section covers a number of special topics, such as the use actually made of the welfare services, the extent to which young children are separated from their parents, and the important question of mothers with young children taking outside jobs. It also includes the health, growth and development of premature children.

EMPLOYMENT SERVICE

Advertisements regarding "positions available" and "personnel available" will be published in from one to four consecutive issues, depending upon the requirements of the agency or person concerned. They are limited to seventy words or less, with a confidential box number if desired. There is no charge for this service to members of the Association. Health agencies are charged a flat rate of $10.00 for the advertisements (up to four consecutive issues) and for the service. The rate for non-members is $5.00. The service includes confidential clearing of information between prospective employer and employee if desired.

Medical Officer of Health required for Port Arthur and District Health Unit. Generous mileage allowance. Population 50,000. Pension plan, Blue Cross, etc. available. Apply, giving biographical details to H. M. Lampshire, Secretary-Treasurer, Port Arthur and District Health Unit, 63 N. Algoma St., Port Arthur, Ont. 8–9

Medical Officer of Health as assistant for established urban-rural health unit. Write to Dr. R. M. King, Director, York County Health Unit, 171 Main St. Newmarket, Ontario. 5–8

Assistant Medical Officer of Health, with Diploma in Public Health, required for the City of Ottawa. Salary $7,080–$8,100 based on experience. Good personnel policies. Five-day week, superannuation, etc. Further details may be obtained by writing R. J. Wilson, Director of Personnel, City Hall, Ottawa, Ontario. 7–8

Medical Bacteriologist. The University of Ottawa requires an assistant professor of bacteriology in the Faculty of Medicine. Applicant should be a graduate in medicine, with postgraduate experience in bacteriology, preferably in teaching or laboratory instruction. Please state salary expected. Address inquiries to Dr. R. J. Gibbons, Professor of Bacteriology, University of Ottawa, Ottawa 2, Ontario. 5–8

Victorian Order of Nurses, Toronto Branch, requires qualified public health nurses. Salary range $3,320–$4,150, starting salary based on experience. Annual increments, five-day week, four weeks' vacation, $100 uniform allowance, P.S.I. and Blue Cross available, pension plan benefits. Apply to Director, 281 Sherbourne Street, Toronto. WA. 1-3184. 7–8

Director of Public Health Nursing, City of London. Must possess a Public Health Nursing degree in Public Health Administration. Experienced in all aspects of Public Health nursing services. Administrative and supervisory responsibility. Duties will include planning, co-ordination of Public Health nursing services, and supervision of nursing staff. Full fringe benefits. Salary according to qualifications and experience. Address correspondence, including a photograph, to: W. J. Anthony, Personnel Officer, City of London, Ontario. 8–9

Public Health Nurse qualified for generalized public health nursing services required in town of 4,000 with three elementary schools and one high school. Minimum salary $3,400 with allowance for experience, usual fringe benefits. For further information apply to Dr. W. R. Skelly, Medical Officer of Health, Deep River, Ontario, supplying details of training and experience.